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Vol. 4. contains the 1st of the Journal
Rec'd. Feb. 1858.

JOURNAL

OF THE

ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA.

VOL. IV. PART I.

PHILADELPHIA:
PRINTED FOR THE SOCIETY,
BY J. HARDING.

1824

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JOURNAL

OF THE

ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA.

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Observations upon some of the minerals discovered at Franklin, Sussex County, New Jersey. By LARDNER VANUXEM *and* W. H. KEATING. *Read June* 1, 1824.

In vol. 2, p. 277, of the Journal of the Academy, we published a geological account of the vicinity of Franklin, Sussex county, New Jersey, together with a list of the minerals found at that interesting locality. We proposed furnishing the Academy with a description of some of these minerals; but, from a multiplicity of other engagements, we have been prevented from completing our examination of a substance which we believed new, and to which we gave the name of Dysluite. We hope soon to be able to present it to the Academy, and in the meanwhile offer the following note on some of the accompanying minerals.

1. JEFFERSONITE. As this mineral has been described in vol. 2, p. 194, of the Journal, no further notice of it, at this time, would be necessary, except to describe some of its crystals, which has been accomplished by Dr. Troost, who, moreover, has shown at the same time, and by these crystals, that the jeffersonite, which we believed to be a new species, appears in reality to be nothing more than a variety of the proteus of mineralogy, pyroxene.

At the period at which our account of the jef-

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fersonite was written, we had no crystals of it; our specimens consisting merely of the lamellar variety. It was from the solid given by the lamellar fracture of the mineral, and from the absence of magnesia, which earth was regarded in some measure as an essential component of pyroxene, that we were induced to consider it as new.

In justice to ourselves, it may be necessary to mention that, in mineralogy, the solid given by cleavage has, since the period of the publication of the *Traité de Mineralogie*, been considered next to composition, and faces deduced from the secondary forms, of paramount importance, and sufficient of itself, in the absence of the above named characters, to constitute or determine the formation of a species, of which we have several instances. The value attached to this character, by the late Abbé Haüy, is too well known to need any reference to his works; nor should it excite surprise that so much importance has been given to this remarkable property in minerals, when we consider that this is the first anomaly which has come under our notice; for heretofore the cleavages, parallel to the faces of the primitive form, have invariably been the smoothest and easiest to be obtained.

Whence the cause of this deviation from so general a law, we know not; future observation must determine it.

Mr. Seybert has analyzed a variety of the same

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mineral, which has yielded him 4 per cent. of magnesia. Whether this be accidental or not, we are not prepared to say. All the analyses of pyroxene, noticed by the Abbé Haüy in the last edition of his Treatise of Mineralogy, state the quantity of that earth to be from 10 to 19 per cent., which far exceeds Mr. Seybert's results. Mr. Rose's analyses of pyroxenes are, it is true, of a much later date; but when we recollect the great confusion which exists in this species, we may be permitted to question whether the substances, which he examined, were really pyroxenes. Of those analyzed by Vauquelin and Laugier, no doubt can exist, since the analyses were made at the Garden of Plants in Paris, and, as it were, under Haüy's eye. But the examination of the crystalline forms certainly puts the question of the identity of the jeffersonite and pyroxene at rest.

2. FRANKLINITE. The franklinite forms a mass whose immense extent has been made known in the geological part of our communication. Apparently, it is not perfectly homogeneous in composition throughout; the proportion of manganese which it contains seems to vary, and produces a corresponding variation in the colour of its powder, and in the different effects which result from weathering; nor is it less variable in its external appearance, being in masses, grains of different size, and crystals. The large masses present

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numberless druses, in which the ore has either assumed a regular form, or endeavoured so to do, but has been disturbed while in the act of crystallizing. Its form is the regular octohedron, with deeply emarginated edges, presenting a passage into the rhomboidal-dodecahedron. The crystals vary in dimension from the microscopic size to two or more inches in length. The smallest and most numerous are found at Franklin, and the largest at Stirling. The crystals have a fine metallic lustre, of a black colour, opaque, without any indication of cleavage. Specific gravity 4.98 to 5.08.

3. RED ZINC ORE (*improperly called red oxide of zinc.*) This mineral occurs in several places in the mass of franklinite; but it is at Sterling that it is found not only in the greatest quantity, but in the purest state; the abundance of this mineral is such at this locality, that it will at no distant period be worked for zinc; this ore has not yet been found in crystals, or unmixed with franklinite. According to Mr. Mohs' observations, it presents an imperfect cleavage which connects it with a prismatic system. On breaking the red zinc ore of Sterling, we find two kinds of particles as to size and colour; the largest ones are of an almost ruby red, with considerable lustre, resembling in some measure that of the diamond, and so transparent as to admit of a ready passage to light. The colour of the smaller ones, which are fine gra-

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nular, is of a beautiful dark orange, and of so little lustre as at first sight to induce a belief of their being in an earthy state; but if examined with attention, the effect is observed to arise from interposed light, for no difference can be perceived between them and the larger particles, when examined individually. If both be pulverized, their powder is the same, and is of a bright orange colour.

When the red zinc ore has been a long time exposed to the atmosphere, the smaller particles are washed away, and the larger ones assume a deeper red. It likewise becomes coated with carbonate of zinc, and sometimes with an impure oxide of manganese; the former of these efflorescences may be discovered by its colour, its effervescing with nitric acid, and its producing a styptic salt.

From the circumstance of the transparency of the red zinc ore, no doubt can exist with respect to its being a chemical combination of the oxides of zinc and manganese, such being the result of the analysis of Mr. Berthier, of the School of Mines. The iron, found in it by Dr. Bruce, was owing to an admixture of franklinite.

At all the different localities of the red zinc ore, in Sussex county, it invariably accompanies the franklinite, they mutually envelop each other; when the red zinc ore imbeds the franklinite, the

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latter mineral is usually in the form of grains, which is particularly the case at Stirling.

4. CARBONATE OF ZINC. (*Calamine.*) Besides coating the red zinc ore, this mineral is likewise found in very small veins or fissures, appearing to be of subsequent formation to the mass which encloses them. These veins are in the franklinite, north east of Franklin furnace. The colour of the carbonate is white, without lustre, and with little cohesion, owing to its particles being in an earthy state.

5. SILICEOUS OXIDE OR SILICATE OF ZINC. (*Calamine.*) This mineral is found both at Stirling and Franklin, but it is only at the former locality that it occurs in sufficient quantity to merit attention as an object of importance to manufactures. It presents itself in the form of concretions or grains, also in amorphous masses, and likewise in crystals. The concretions (which are the most common manner in which it exists) are evidently nothing more than the product of a disturbed crystallization; for every grade between them and the perfect crystals are observable. The form of the crystals is an hexagonal prism with dihedral terminations, the faces of which repose upon the lateral edges of the prism; the angles of the faces of the prism are 120°, and of the faces of the pyramid, with one another, about 118°(?) being the regular hexagonal prism with a rhomboidal summit, of course leading to a rhombohedron for the primitive

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form; many of the crystals are an inch in diameter, and two inches long; some are even much larger. The faces and angles of the prism are generally well defined, but it is extremely rare to find the pyramids well determined, owing, in some cases, to the convexity of their angles; in others, of the faces themselves, and also to various depressions and protuberances arising from different causes. From these circumstances, we cannot positively affirm that the terminal faces are those of a rhombohedron; particularly as we have not been able to observe in the crystals any evident marks of cleavages parallel to these faces, nor, in fact, in any other direction. The specific gravity of this mineral is 3.89 to 4.; it forms a jelly with strong acids, and is infusible by the blowpipe.

The colour of the siliceous oxide of zinc varies from a light greenish yellow (which is the purest) to a deep flesh red; it also occurs inclining to a green, brown, gray, and even to a black colour, all of which are owing to variable admixtures of franklinite, garnet, pyroxene, &c. The colours are dull and dirty; most of the crystals are covered with a brown ochrey coating. In transparency it exhibits every degree, from the highly translucent to the opaque; the most translucent is the light greenish-yellow variety, which is the kind that exists in grains, and is most abundant.

The associates of the siliceous oxide of zinc are,

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at Stirling, the franklinite, the red zinc ore, the dysluite, carbonate of lime, and mica; at Franklin, the garnet, pyroxene, &c.

Chemical part. No loss, or any change whatever by calcination, consequently anhydrous; decomposable by all the strong acids; forming a jelly, owing to liberated silex. It was found to consist of silex and of the oxides of zinc, iron and manganese, the analysis having been made upon the flesh coloured variety.

The *modus operandi* was to heat with nitro-muriatic acid, until a decomposition was effected, to evaporate to dryness in order to set the silex free, then add acidulated water; the liquor was, again, gently heated and filtered, which gave the silex, leaving the metallic oxides in solution, from which the oxides of iron and manganese were precipitated by ammonia in excess. The zinc was then obtained from the solution. The result of the analysis was

Silex,	25.44
Deutoxides of iron and manganese,	6.50
Oxide of zinc, by difference,	68.06
	100.00

Another analysis, made by Mr. Vanuxem, upon a purer variety, being crystals of a light flesh colour, yielded

Silex,	25.00
Oxide of zinc,	71.33
Oxide of manganese,	2.66
Oxide of iron,	.67
Loss,	.34
	100.00

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Note. It is not improbable, from the different analyses and crystals which we have of the combination of oxide of zinc and silex, that there are two species, one hydrous, the other anhydrous.

Nova generis Capromys, Desm. species. Auctore Edwardo Poeppig, M. D. *Lips. Sax.*

[read June 15, 1824.]

Perpaucæ solum nobis ad manus sunt paginæ, diarii zoologici, in itinere per insulam Cubam ab annis 1822—24 instituti, quam ob rem nimia sequentis descriptionis brevitas, ut excusetur rogamus. Ampliorem descriptionem anatomicam, et omnium partium delineationem alio tempore exhibere promittimus.

Character generis adeo notus, ut persuasum nobis habeamus eum jure meritoque hic ommitti posse. Sequens species a nobis inventa primis anni 1824 mensibus.

Capromys *prehensilis*, Poeppig. Animadv. in Faunam Cubens. Insul.

C. cauda elongata, tereti, totius corporis longitudini, capite, plantis, palmis, unguibusque albis.

Corpus fere cylindricum, versus pelvim, (præcipue in foem.) parum amplius. Color dorsi ex griseo et ferrugineo mixtus. Pili ad basin mollis-

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simi, nigri, medio grisei, apice ferruginei, ibique rigidi. Vellus densum, præsertim in dorso. *Collum* breve, pilis brevibus, flavescentibus, adpressis dense tectum. *Frons, genæ, jugulumque* ex albo flavescunt, pectus et abdomen alba, stria utrinque una lateralis, obscurior. *Regio pubis* nuda, *Caudæ* basis ferruginea, cute grisea, cauda cæterum teres, versus apicem superne nuda. Digiti pedum manumque tecti pilis rigidis, incanis, nitidis. *Caput* unicum, fronte planiuscula, *auriculis* ovatis, ciliatis, extus nudis, intus hirtis, nigris, *oculis* oblique positis, hiatu inter palpebras ovato, angulis exterioribus deorsum ad nares vergentibus, *palpebris* margine nigris, ciliis brevibus, nigris. *Nasus* acutus, truncatus, nudus, valde mobilis, ater. *Nares* in angulo obliquo cum maxilla superiore, lineares, in animale vivo ovati. *Labia* crassa pinguia, albida; *superius* hilo profundo, alte inter nares oriente, exaratum, fere divisum, *inferius* integrum. *Apertura* oris transversalis, maxillis distensis, ovata, tamen dentibus molaribus; hoc modo non in conspectum venientibus. Mystax, longus, patens, mobilis, albus, nitens. *Collum* breve musculosum, forte; capitis circumferentia, inter humeros retractile.

Jam ad finem descriptionis pervenimus, cum reliquæ incepti paginæ antea Lipsiam transmissæ fuerint. Vix nobis aliquid addendum superest, quam dimensiones, pollicibus anglicis expressæ.

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	Pollices.	Lineæ.
Longitudo totius animalis ab extremitate caudæ ad nares . . .	25	2
„ „ „ ad scapulas . . .	20	2
„ caudæ	12	3
„ capitis cum collo et scapulis . .	4	8
„ „ ab atlante	3	0
„ brachiorum ab scapula ad unguis tertii apicem . . .	7	5
„ manuum a basi carporum . . .	1	7
„ digitorum	0	7
„ unguium	0	4
„ femorem a pelvi ad unguis quarti apicem	7	3
„ pedum a calcaneo ad unguis quarti apicem	3	8
„ unguium pedum	0	4
„ auricularum	0	7
„ rictus inter palpebras	0	5
„ „ oris	1	7
„ narium	0	2
„ pilor. mystac. longiss.	3	0
Circumferentia capitis in fronte parte maxime elevata	5	0
„ „ verticalis ad oculos . .	4	5
„ colli	4	5
„ corporis regione epigastrica hypochondriaco . . .	11	0
„ „ ad humeros verticalis .	10	0
„ caudæ in puncto insertionis . .	3	5
„ „ ad apicem	0	6
Latitudo ab angulo oculi exter. ad opposit. . .	1	0
„ „ „ „ posteriori „ . . .	1	8
„ „ „ „ exteriori ad nares . .	1	0
„ aure ad oppos.	1	5
„ pectoris	3	0

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Latitudo region. pub. inter pedes	3		5
„ manus in carpis	0		6
„ in metacarpis	0		8
„ pedis in tarsis	0		8
„ in metatarsis	1		0
Squamulæ caudæ latæ	0		1
Annuli squam. caudæ inter se distant . . .	0		1
Elevatio verticalis animalis insedentis	4	0——4	8

Ab Hispanis vocatur Agutia Caravalli, in imitationem tribus servorum cujusdam, Guineensis, frequentissimi in Cuba. Pigritia, tristitia, motu corporis lento, fame insatiabili, nationi Africanæ Caravalli similis dicitur.

C. *Furnieri.* Desm. Hispanis Agutia Congo, ob mobilitatem, vultus semper nitidum, &c. quas res obvias quoque esse in natione Africana Congo dicunt. Hanc speciem ita definiendam censio.

C. *Furnieri.* Desm.* C. cauda abbreviata, longitudine tertiæ partis, totius corporis, capite concolore palmis, plantis, unguibusque nigris.

Utraque species habitat in Cubæ interioris sylvis. Desmarestii descriptio bona quamvis, uti videtur secundum exemplar nimis incompletum, nimisque juvenile facto. Sæpe enim nobis contigit videre specimina C. Furnieri ponderis librarum 12—16. Hæc species insuper vulgaris; animal cæterum stupidum, nocturnum, tempore diurno nunquam ex arboribus descendens.

* Isodon *pilorides*, Say. Vol. ii. p. 330. Mr. Say's generic name being pre-occupied, cannot be adopted; but his specific name, having the priority, must be retained.—*Pub. Com.*

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C. *prehensilis* multo rarior, solumque in sylvis versus oram Cubæ australem obvia, regione vix culta, densis et obscuris sylvis obtecta; v. e. in Partido de las Piedras, ad Macuriges, ad Masmariges, &c. nunquam nobis visa in parte Cubæ boreali. Cauda utitur magna dexteritate. Sæpe venatorem eludit; cauda enim ramum amplectens, inter plantas innumeras parasiticas, sæpe pendulas, quibus altiores obteguntur, arboris regionum tropicarum sese condit, ita ut nunquam suspicio oriatur, inter vimina fragilia et tenerrima Orchidearum folia abditum esse animal sæpe ponderis 7—9 librarum. Modus edendi et vivendi idem ac in specie nota Desmarestii.

On an extinct species of Crocodile not before described; and some observations on the Geology of West Jersey. *By* R. HARLAN, M. D. *Read May* 4, 1824.

At various times there have been presented to the Academy specimens of fossil bones, principally from the state of New Jersey; which have not been hitherto described or noticed. The Society is thus possessed of treasures, of whose value they are not exactly aware: to obviate this, I have undertaken to describe such as are most rare and interesting, and whose characters remain, in some degree, undefaced.

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It will be necessary, in the first place, to offer a few remarks concerning the formation in which these fossils occur; in doing which, I shall content myself with the bare mention of the fossil *testaceæ*, some of which occur in immense numbers. For a knowledge of these, I am indebted to a gentleman eminently qualified to do the subject entire justice, and from whom we may anticipate, I hope very shortly, a full and accurate description of these very interesting remains; it is almost unnecessary to state, the naturalist alluded to is Mr. T. Say, who, together with Mr. T. Peale and myself, have lately returned from a short excursion to the "Marl-pits" of New Jersey. We were much assisted in our investigations by Dr. Samuel L. Howell, who politely offered to accompany us, and whose knowledge of the country was peculiarly serviceable.

All that part of the state, denominated West Jersey, and which is included between Trenton and the Delaware Bay, on the North and South, and between the Atlantic ocean and Delaware river, on the East and West, is entirely of oceanic or tertiary formation. The surface is composed chiefly of sand, occasionally of gravel, and very seldom of clay; not unfrequently of all three mixed.

This circumstance, in connexion with a knowledge of the nature of the substance improperly termed *Marl*, will explain the vague and contradictory opinions of the farmers, respecting the

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manuring qualities of this earth; some of whom informed me, they considered a load of this *Marl* equal to a load of *dung*. Others thought, that although the *Marl* enriched the land, and made it more productive the first year, it subsequently produced an impoverishing effect on the soil. Others again declared, that though they had frequently made the experiment, they always found the Marl absolutely injurious.

The fact is, that this earth, which was formerly very extensively used as manure, possesses no more claim to the title of *Marl*, than any other earth in which fossil testaciæ abound; generally speaking, it is little more than a ferruginous clay. Quantities of pyrites are also found to exist, almost universally; sometimes constituting the casts of shells, at others filling the cavities of bones; and to the prevalence of which may be attributed the imperfect state in which the organic remains are generally discovered, and the very great rapidity with which they decay on exposure to the atmosphere, unless they are varnished, or other means are used to prevent the access of the air.

It is, further, to the prevalence of pyrites we must refer the injurious effects of the "*Marl*," when spread too thick upon the soil; when, on the other hand, if mixed sparingly with new soil, it destroys or reduces to earth the fibrous matter, and thus proves highly beneficial as a manure. Should the soil be composed almost entirely of

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loose sand, (as it frequently is) the clay, which is a principal constituent of some of the "*Marl-pits*," will give consistency to the soil, and enable the vegetables to take root; in which sense it may be said to act as a manure; but even in this case it is probably not so beneficial as would be an equal quantity of Pennsylvania *clay*, without the iron earth, which always occurs with the Jersey clay. But should there happen more pyrites than usual, or should the soil be naturally argillaceous, then must the "*Marl*" prove destructive to vegetation, and disappoint the agriculturist.

Not unfrequently whole strata or beds of this *Marl* will occur without a single fossil, of a loose friable structure and moist nature, more or less granulated, and of various colours, but most commonly of a dark slate-black or greenish colour; this is the most fertilizing, and has been by some supposed to consist chiefly of decomposed organic remains—but how erroneous is this opinion, will be clearly comprehended by the very accurate analysis of this earth, furnished some years ago by Mr. Henry Seybert of this city. (Vid. Cleaveland's Min. and Geol. 2d ed.)

Silex,	49.83
Alumine,	6.00
Magnesia,	1.83
Potash,	10.12
Water,	9.80
Protoxide of Iron,	21.53
Loss,	.89
	100.00

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This specimen of "*green earth*" or the supposed Marl, was from Rancocus creek; the quantities of its constituent parts no doubt vary with the locality. It constitutes, in almost every instance, the matrix of the fossil reliquiæ, of which the Terebratula and Ostrea occur in the greatest profusion, sometimes commingled, at others in nearly distinct beds, as at Mullica hills and Blackwood town mills. At the county poor house we examined a creek, at the bottom of which were beds of fossil ostreæ, and a few *rolled* specimens of Favosite and Fistularia, together with broken Belemnites; occasionally we observed some of the beds composed of Ostreæ, Belemnites, Terebratula, &c. heaped together in every direction and position, conglomerated together by the green earth above-mentioned, and quartz pebbles, scarcely any of the remains preserved entire.

Besides the fossil reliquiæ above named, we may further add Ammonites, Rostellaria, Turbinolia, Arca, Pyrula, Pecten, Donax, together with the bones or teeth of sharks, crocodiles, turtles, and a very remarkable tooth belonging to some unknown Ichthyosaurian reptile: lignite, amber, &c.—also, the vertebræ of two or more species of the genus Cetacea—also, Phytolithites, roots of trees encrusted with pyrites, &c.

This very extensive formation, of which we are now treating, lines the coast for several hundreds of miles, commencing at the northern extremity

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of Long Island, and extending as far as the Gulf of Mexico; and borders immediately the primitive rocks. Having, as yet, been examined but at a few points, this oceanic deposition is imperfectly known; we shall have occasion shortly to treat further of some of the fossils discovered in the same depositions from Maryland, concerning which, some very interesting geological observations have been published in the 3d vol. of Silliman's Journal, by Dr. G. Troost. (Vide art. 3d, description of a variety of amber, &c.)

I shall now treat more particularly of the fossil bones brought from Jersey; and first, of a new extinct species of Crocodile, the dental bone of which was, some time past, found three miles from "White Hill," and presented to the Academy by Mr. Samuel Wetherill of Burlington, N. J. a corresponding member.

The fossil, under consideration, is the dental bone of the right side, in a tolerable state of preservation, perfectly fossilized or impregnated with iron, containing the sockets for eleven teeth, in a space of twelve inches; three of the teeth only remain perfect, a portion of the bone is lost posteriorly and interiorly; consequently, the total number of teeth cannot be ascertained with perfect accuracy; though, from the great size of the inferior maxillary foramen immediately behind the last remaining tooth, there could not have existed more than one or two more at most. A

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portion of the angular bone was fortunately preserved, which will enable us to determine the form of the angle, and thus to reconstruct, with sufficient accuracy, the whole of the lower jaw.

The most striking peculiarity of this remnant is its great thickness in proportion to its length, compared with the same part in other crocodiles; with which circumstance the structure and appearance of the teeth perfectly correspond; being exceedingly short, thick and blunt, except the very young tooth, which is sharper and more conical.

In the CROCODILUS *acutus*, a portion of the dental bone, eight inches in length, contains ten teeth; the same measurement taken from the CROCODILUS *lucius*, thirteen and a half feet long, affords space for thirteen teeth. In our fossil, on the contrary, there is only space allowed for seven teeth; in every instance commencing from the fourth tooth, and enumerating backwards.

In the C. *acutus*, the dental bone, immediately behind the fourth tooth, is one inch, four-tenths, in breadth. In the C. *lucius*, one inch, seven-tenths. In the fossil, two inches, four-tenths. Depth of the same portion of bone, in the C. *acutus*, is one inch, two-tenths; in the C. *lucius*, two inches; in the fossil, two inches, five-tenths. By this measurement, the fossil bone is shown to be nearly cylindrical.

The teeth of the fossil, though very short and thick, are not much worn—the largest tooth of the

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lower jaw, in the C. *lucius*, thirteen feet long, is twenty-four tenths in circumference; the largest of the fossil teeth is thirty-three tenths. Of one of the loose fossil teeth, the length is two inches; diameter one inch; whilst the portion which projected above the bone, is only half an inch long. The caliber of the tooth at its base is half an inch in diameter. The bodies of the teeth are separated by a plate of bone only four or five-tenths in thickness.

The anterior or alveolar portion of the lower jaw, in all the Crocodiles excepting Cuvier's sub-genus C. *gangeticus*, presents a series of vertical curvatures; there are three in number in the fossil, in which respect it resembles the recent Crocodiles and Alligators; but which will alone separate it from the Gavials as well as all the *fossil* specimens hitherto discovered, which most nearly resemble the Gavials; in all of which this portion of the jaw is straight; but the present species is still further separated from all the sub-genera of Cuvier, by the greater relative thickness and less length of the dental bone, as well as in the peculiarities of the teeth above-mentioned. The space between the fourth tooth and greatest elevation of the dental bone, in the fossil (a. b.) contains five teeth; in the C. *lucius*, nine; in the C. *acutus*, six.

The distance from the fourth tooth, (which is very large proportionably) to the anterior margin of the symphysis in the fossil, is four inches, two-

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tenths; in the C. *lucius*, two inches, seven-tenths; in the *acutus*, two inches, six-tenths. The symphysis of the lower jaw extends posteriorly to the fourth tooth in the C. *acutus*; it terminates two inches anteriorly in the fossil; its termination is nearly opposite the fourth tooth in the C. *lucius*. Directly posterior to the fourth tooth, there exists a considerable curvature inwards, in the fossil; directly the reverse is the case in the C. *lucius*; but a similar curvature exists in a very slight degree in the C. *acutus*.

The foramina for the transmission of nerves and blood-vessels are unusually large and numerous in the fossil. By referring to the figures, other differences will be noticed equally remarkable, though not so readily expressed; all of which, taken collectively, constitute, in my opinion, characters sufficient to require for this animal the establishment of a new subgenus.

I am not, as yet, prepared to answer positively to the question, did this animal exist in salt or fresh water? As far as my information extends, no fossil Crocodile has hitherto been discovered in salt water formation. The pretended Crocodiles, said to have been found with fish in the pyritose schistus of Thuringia, are evidently Monitors, as has been demonstrated by Cuvier. However, the form of the teeth, great thickness, and strength of the jaws, in the present instance, would qualify

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this species to crush shell-fish, &c. and defend itself against powerful enemies.

Numerous vertebræ of Crocodiles have been found in the same locality, none of which, however, are large enough to have belonged to this individual, but very different from any I have been able to compare them with; though very much broken, yet this difference is readily recognized by a very peculiar compression of the lateral and inferior portion of the bodies; as might be anticipated, the vertebræ, already discovered, denote a variety of species.

PLATE I.

Fig. 1. Lateral view of the fossil bone.
2. Anterior view of the same.
3, 4, 5. Different views of a fossil vertebra.
6, 7. Two views of a vertebra from another part of the column.
8. Fossil tooth of natural size.

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Observations on the Nomenclature of Wilson's Ornithology. *By* Charles Bonaparte. *Read March* 23, 1824.

[continued from vol. iii. p. 371.]

SITTA.

Of this very natural genus Wilson describes three species, all peculiar to America.

59. S. *carolinensis.* Vol. i. p. 40. Wilson was correct in considering this bird distinct from the European species, as Brisson and Latham had already done, although many authors believed it to be a mere variety.

SYNONYMES.

S. *europea*, β *carolinensis*, Linn. Gmel.
S. *carolinensis*, Briss. Lath.
S. *jaimaicensis?* Linn. Gmel. Lath.

Vieillot has called it Sitta *melanocephala*, but this name, though very appropriate, must be rejected, as he had no right to change that of Latham.

60. S. *varia.* Vol. i. p. 43. I think Wilson did well to adopt the name given by Bartram, as it is doubtful to what species or variety of any other author this bird can be referred. The species is now well fixed by our author, and his name will, no doubt, be exclusively adopted.

SYNONYME.

S. *jaimaicensis*, var. *minor?* Gmel. Lath.

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Wilson is probably right in considering, as a young bird of this species, the SITTA *canadensis* of Linn. Gmel. Lath. (*Le Torchepot du Canada*, Buff. pl. enl. 622, f. 2.)

I should have restored the name of *canadensis*, if the correctness of the synonyme was not doubtful.

Although Vieillot quotes Wilson's work, yet he has taken the liberty of appropriating the species to himself, calling it S. *stulta*, a name which seems to be founded upon a ridiculous assertion, which Wilson rejected with contempt, from the character of the following species, that the bird is so stupid as to be "easily knocked down from the sides of the tree with one's cane."

61. S. *pusilla*. Vol. ii. p. 105. Gmelin was in error in considering this bird a variety of the SITTA *europea*. Wilson very properly adopted Latham's name, who placed it as a distinct species.

SYNONYMES.

S. *pusilla*, LATH.
S. *europæa*, β *carolinensis minor*, GMEL.

ALCEDO.

Of their numerous and well characterized genus, only one species has been found in the United States.

62. A. *alcyon*. Vol. iii. p. 59. One of the largest of the genus, and peculiar to America.

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SYNONYMES.

A. *alcyon*, LINN. GMEL. LATH.

Martin-pêcheur hupé de la Louisiane, BUFF. *pl. enl.* 715, (female.)

Martin-pêcheur hupé de St. Domingue, BUFF. *pl. enl.* 593.

CERTHIA.

Though four species are described by our author, only one of them properly belongs to this genus, which has been, with great propriety, very much restricted by modern authors. The three objectionable species, however, were never previously referred to CERTHIA; Linne placed them under MOTACILLA, and Latham under SYLVIA.

63. C. *familiaris*. Vol. i. p. 122. As our author supposed, this little bird is the same in both continents, but is much less frequent on this side of the Atlantic. It is the only true CERTHIA hitherto known to inhabit the United States.

SYNONYMES.

C. *familiaris*, LINN. GMEL. LATH. TEMM. VIEILL. (referring to *Le Grimpereau, Ois. dorés, vol.* ii. *p.* 107, *pl.* 72.)

Le *Grimpereau*, BUFF. *pl. enl.* 681, *f.* 1.

64. C. *maculata*. Vol. iii. p. 23. Certainly not a CERTHIA as the genus is now defined. But although Linne arranged it with his MOTACILLA, and Latham with his SYLVIA, I am not surprised that Wilson placed it in CERTHIA, as it approximates closely to that genus as formerly characterized:

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one of Wilson's reasons for this arrangement was drawn from the habit of creeping, for which this bird is remarkable; but the same character might have led him to arrange the Pine Creeper here also, which he places with the SYLVIA according to Latham, although Linne considered it a CERTHIA. Vieillot, in his *Ois. de l'Amer. Sept.* calls our bird CERTHIA *varia*, but he has subsequently made for it alone, his new genus MNIOTILTA. In my opinion, however, this genus cannot be adopted, but the species must be called SYLVIA *varia*, agreeably to Latham. I do not know why our author chose Bartram's specific name in preference to that of Linne.

SYNONYMES.

MOTACILLA *varia*, LINN. GMEL.
SYLVIA *varia*, LATH.
CERTHIA *varia*, VIEILL. (quoting *Le Grimpereau varié Ois. dorés, vol.* ii. *p.* 111, *pl.* 74.)

Vieillot subsequently called it MNIOTILTA *varia*.

65. C. *caroliniana.* Vol. ii. p. 61. Wilson was very wrong, in my opinion, in arranging this and the following species with the CERTHIA. They are certainly true wrens, and, on this occasion, his vulgar is more correct than his scientific appellation. Bartram was correct in placing them with the wrens. Without hesitation, I take this opportunity of expressing my opinion on the adoption of a separate genus for the true wrens, under the

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name of TROGLODYTES, as I think these birds have sufficient character, in form and habits, to entitle them to that distinction. The genus, as I adopt it, corresponds to the sixth section of Temminck's SYLVIA, and to the genus TROGLODYTES of Vieillot, as he formerly established it, including his two more recent genera TROGLODYTES and THRYOTHORUS, and may be divided into two subgenera, corresponding with those genera. This bird, which was incorrectly indicated by Gmelin, as a variety of the European wren, together with the following species, and a few others, will form the second subgenus, which is peculiar to America. Recurring to the bird under consideration, I propose it should be called TROGLODYTES *ludovicianus*, which is the original specific name; Bartram's name of *caroliniana* being not in any respect preferable.

SYNONYMES.

MOTACILLA *troglodytes*, var. γ GMEL.
SYLVIA *ludoviciana*, *sp.* 150, LATH.
Roitelet de la Louisiane, BUFF. *pl. enl.* 730, *f.* 1.
TROGLODYTES *arundinaceus*, VIEILL. *pl.* 108.

The historic description, which this latter author has given, evidently belongs to the following species; he subsequently perceived his error, and transferred the specific name to that species, placing them both in his new genus THYROTHORUS, and distinguished the present bird by the specific

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name of *littoralis*, which, of course, must not be adopted.

66. C. *palustris*. Vol. ii. p. 58. Agreeably to the preceding observations, I propose for this species the name of TROGLODYTES *palustris*, Wilson's specific name having the priority over that of Vieillot, and being also more appropriate. Wilson's quotation of Latham, under this species, must be transferred to the preceding.

Vieillot, in his American Ornithology, inadvertently described the manners and habits of this bird, when speaking of his figure of the preceding species; but subsequently, informed probably by Wilson's work, he discovered his error, and named this bird THRYOTHORUS *arundineus*. But he had no right to change Bartram and Wilson's name, which is certainly preferable.

TROCHILUS.

Although this numerous genus is peculiar to America, yet only two species are known to visit the United States, and that in summer alone. It is very naturally divided into two subgenera, viz. *Trochilus* and *Polytmus*, considered as genera by some authors.

The only species, described by Wilson, belongs to the first subgenus.

67. T. *colubris*. Vol. ii. p. 26. Remarkably well described by our author, and is the only spe-

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cies that visits the eastern region of the United States.

SYNONYMES.

T. *colubris*, LINN. GMEL. LATH. VIEILL.
T. *colubris*, *β tomineo*, LINN. GMEL. (young female.)
T. *amethystinus?* LINN. GMEL. LATH.
L'*Oiseau mouche rubis*, VIEILL. referring to *Ois. dorés*, *vol.* i. *p.* 66, *pl.* 31, (male) *pl.* 32, (female) *pl.* 33, (young.)

STURNUS.

The only bird described under this genus by our author, never belonged to it; it was a Linnean ORIOLUS, and is now an ICTERUS. A true STURNUS is, however, found in the United States, but, misled by some European authors, Wilson arranged it in the genus ALAUDA.

68. S. *prædatorius*. Vol. iv. p. 30. Wilson was further wrong in changing the beautiful Linnean specific name of this bird, which must, therefore, be called ICTERUS *phœniceus*, agreeably to Lacepede and Daudin.

SYNONYMES.

ORIOLUS *phœniceus*, LINN. GMEL. LATH.
ORIOLUS *griseus?* GMEL. (female and young.)
Troupiale à ailes rouges de la Louisiane, BUFF. *pl. enl.* 402, (a very bad representation of the adult male.)
It has also been called ICTERUS *pterophœniceus*, by Brisson.
CASSICUS (XANTHORNUS) *phœniceus*, by Cuvier.
AGELAIUS *phœniceus*, by Vieillot.

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Wilson was the only author who changed the specific name; he, however, has described the manners and habits of the species with his usual perspicuity and accuracy.

TURDUS.

This genus, species of which are found in every part of the globe, was formerly much more comprehensive than at present. As now restricted, it is much more natural, although still very numerous in species. The nine species, described by our author, are all foreign to Europe, and are all true TURDI if we except one, which is a SYLVIA.

69. T. *polyglottos*. Vol. ii. p. 13. This celebrated bird, second to none in any part of the globe for the versatility of its vocal power, had been described, by former authors, and what is more extraordinary, by Linne himself, under at least three different names. Wilson's account of this bird is admirable.

SYNONYMES.

T. *polyglottos*, LINN. GMEL. LATH.
T. *orpheus*, LINN. GMEL. LATH. VIEILL. *pl.* 68.
T. *dominicus*, LINN. GMEL. LATH.
Merle cendrè de St. Domingue, BUFF. *pl. enl.* 558, *f.* 1.

Though Vieillot adopted the name of *orpheus*, which is certainly excellent, I think that of *poly-*

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glottos is still more appropriate for this most extraordinary bird.

70. T. *rufus*. Vol. ii. p. 83. A well known species, the history of which appears to be perfect, as given by our author.

SYNONYMES.

T. *rufus* LINN. GMEL. LATH. VIEILL. *pl.* 59.

Grive de la Caroline, appelé le Moqueur Français, BUFF. *pl. enl.* 645.

71. T. *melodus*. Vol. i. p. 35. Our author, who was the first to distinguish the three closely allied species of North American thrushes from each other, by decided characters, has, nevertheless, embroiled their nomenclature, as is evident from my observations on the present and the two following species. This bird being evidently the T. *mustelinus* of Gmelin and Latham, Wilson's new name, which is not modelled agreeably to any language, must be rejected.

SYNONYME.

TURDUS *mustelinus*, GMEL. LATH. VIEILL. *pl.* 62.

72. T. *solitarius*. Vol. v. p. 95. The name of T. *minor* must be restored to this species, as formerly applied to it by Gmelin and Latham. Wilson probably changed it as improper, but if this species be not absolutely the smallest of the genus, it is, at least, one of the smallest. Wilson's name

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is also inadmissible, inasmuch as it has been given to an European bird.

SYNONYMES.

T. *minor*, GMEL. LATH. VIEILL. *pl.* 63.
Mauvis de la Caroline, BUFF. *pl. enl.* 556, *fig.* 2.

It is a singular coincidence, that the French name, given by Vieillot to this species, is the same in signification with Wilson's name above quoted.

73. T. *mustelinus*. Vol. v. p. 98. Wilson having given the name of *melodus* to the *mustelinus* of former writers, as we have already observed, thought proper to appropriate the old name to this new species. This procedure was evidently incorrect, and added to the confusion. The name of *mustelinus* must, therefore, be restored to the preceding species; and as the present species will then be destitute of a name, I propose for it that of T. *Wilsonii*.

I do not consider myself censurable for the frequent repetition of the name of this great ornithologist, as applied to species in different genera; it is a tribute of respect which I conceive justly due to one who has done so much for the benefit of my favourite science. Owing to a typographical error, the length of this bird is stated, in Wilson, to be ten inches; the real length is seven inches.

74. § T. *aquatius*. Vol. iii. p. 66. I cannot say any thing of this new species, which I have not yet been able to examine closely, but that Vieil-

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lot's name of T. *motacilla*, having the priority, and being besides a very expressive one, must be adopted.

SYNONYME.

T. *motacilla*, VIEILL. *pl.* 65.

75. T. *aurocapillus*. Vol. ii. p. 88. This pretty little bird is obviously a true SYLVIA, both by its form and habits. Linne and Cuvier were of the same opinion when they placed it in their large genus MOTACILLA, and Brisson also when he made a FICIDULA of it. Latham considered it a TURDUS, but, in my opinion, he was wrong, and probably misled our author, who, however, states that it "might with propriety be ranged with the wag-tails." This species must, therefore, be called SYLVIA *aurocapilla*.

SYNONYMES.

MOTACILLA *aurocapilla*, LINN. GMEL.
TURDUS *aurocapillus*, LATH.
Petite Grive de St. Domingue, BUFF. *pl. enl.* 398, *f.* 2.
TURDUS *coronatus*, VIEILL. *pl.* 64.

76. T. *migratorius*. Vol. i. p. 35. This common and familiar species is almost an intermediate link between the two subdivisions of this genus, TURDUS and MERULA, having the same voice, and many of the same manners, with the T. *merula* of Europe. Its interesting biography is ably delineated by the happy pen of our author.

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SYNONYMES.

T. *migratorius* LINN. GMEL. LATH. VIEILL. *pl.* 60, (adult) *pl.* 61, (young.)
Grive du Canada BUFF. *pl. enl.* 568, *f.* 1.

77. T. *lividus.* Vol. ii. p. 90. Linne, probably misled by a bad representation of this bird, arranged it with the MUSCICAPA. But it is, in fact, a true TURDUS in figure, habits, and song; belonging to the subdivision of this genus, called *Merula*, of which the Blackbird of Europe is the type. Wilson, with his usual good judgment, referred it to TURDUS, Vieillot did the same, and every one acquainted with ornithology would have pursued the same course. The name, given by the latter author, having the priority over that of Wilson, and being, at the same time, admirably characteristic, must be adopted, and the species called TURDUS *felivox.* This bird is said to be found in Kamschatka.

SYNONYMES.

MUSCICAPA *carolinensis*, LINN. GMEL. LATH.
TURDUS *felivox*, VIEILL. *pl.* 67.

AMPELIS.

No species of this genus, as now justly restricted, inhabits North America. They are all peculiar to South America. The bird, described by Wilson under this genus, as well as the European

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species, belongs now to the genus BOMBYCILLA, which is confined in its range to the North of both continents, and includes but two species. This genus is adopted by almost all the modern ornithologists. Some, however, have taken the liberty of changing the name to BOMBYCIPHOLA, and others to that of BOMBYCIVORA, but I think that Brisson's name of BOMBYCILLA ought to be exclusively adopted.

78. A. *americana.* Vol. i. p. 107. This species is peculiar to North America, and replaces here the B. *garrula* of Europe, than which, however, it is much more common, and breeds in more temperate countries. Wilson deserves commendation for having proved this bird to be distinct from the European, and not a mere variety of it, agreeably to the best European authors. Brisson, however, had previously considered it a distinct species, and his name of BOMBYCILLA *carolinensis* must, therefore, be adopted in preference to both those of Wilson and Vieillot.

SYNONYMES.

AMPELIS *garrulus*, β *carolinensis*, LINN. GMEL. LATH.
BOMBYCILLA *cedrorum*, VIEILL. *pl.* 57.

The latter name seems improper, the "red cedar," on the berries of which the bird feeds, and from which it takes the vulgar name of "Cedar-bird," being a JUNIPERUS.

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This species is also called, by Meyer, BOMBYCIPHORA *xanthocælia*.

LOXIA.

The four species, described by our author under this genus, do not now belong to it, as it has been justly restored by Illiger to the limited boundaries formerly assigned to it by Brisson, corresponding precisely with the following genus CURVIROSTRA of Wilson. Three of these four species are peculiar to America, and are now properly arranged with FRINGILLA, from which they differ only by the more robust bill; a character, however, which will be considered of little consequence, when we review the regular gradation of relative magnitude in the bills of species that intervene between the large billed F. *coccothraustes* and the slender billed F. *carduelis*, &c. The fourth species, agreeably to Temminck, belongs to the genus PYRRHULA of Brisson, and is common to the north of both continents.

79. L. *cardinalis*. Vol. ii. p. 38. This beautiful species, distinguished both by its dress and song, must now be called FRINGILLA *cardinalis*.

SYNONYMES.

LOXIA *cardinalis*, LINN. GMEL. LATH.

Gros-bec de Virginie, appelé Cardinal huppé, BUFF. *pl. enl.* 37, (male, the feet are badly coloured; with all the authors

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he stated the feet to be red; but Wilson correctly remarks that the feet are never of that colour.)

Vieillot, in his large work, does not speak of this bird, nor indeed of any of its tribe; this work having, as is well known, been discontinued after the publication of the second volume. In his following writings, this author calls it COCCOTHRAUSTES *cardinalis*, having adopted that genus from Brisson. He, however, confesses (as other writers have done, who have pursued the same course,) that this genus is so closely allied to FRINGILLA, that he cannot determine to which of the two some of the intermediate species ought to be referred.

Temminck very correctly observes, that although eight or nine genera have been formed out of the natural one, FRINGILLA, yet this genus will always remain as a whole, notwithstanding the caprice of writers. In order to facilitate the acquisition of a knowledge of species in this very numerous genus, Temminck proposes to divide it into three sections, under the names of *Laticones*, *Brevicones*, and *Longicones;* these, in my opinion, may be considered as subgenera, (the characters of the subgenus not being necessarily as definite and positive as those of the genus) with the names *Coccothraustes*, *Fringilla*, and *Carduelis*. The *cardinalis*, as well as the two succeeding species, will then belong to the former.

80. L. *ludoviciana*. Vol. ii. p. 135. Many er-

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rors have occurred in relation to this bird. Gmelin and Latham described it under three or four different names, in the genus LOXIA and in that of FRINGILLA. In the body of his work, Wilson calls it LOXIA *rosea*, but he corrects himself in the catalogue, by restoring the name given by Linne. This bird must now be called FRINGILLA *ludoviciana*.

SYNONYMES.

LOXIA *ludoviciana*, LINN. GMEL. LATH.
FRINGILLA *punicea*, GMEL. LATH. (adult male.)
LOXIA *obscura*, GMEL. LATH. (female.)
LOXIA *maculata?* GMEL. LATH. (young.)
Gros bec de la Louisiane, BUFF. *pl. enl.* 153, *fig.* 2, (male.)
Brisson called it COCCOTHRAUSTES *ludovicianus*.
Vieillot named it COCCOTHRAUSTES *rubricollis*, and Sabine PYRRHULA *ludoviciana*.

81. L. *cærulea*. Vol. iii. p. 78. This rare bird, though somewhat allied to some of the PYRRHULÆ, is a FRINGILLA of the subgenus *Coccothraustes;* it must, therefore, be called FRINGILLA *cærulea*.

SYNONYMES.

LOXIA *cærulea*, LINN. GMEL. LATH.
Brisson considered this bird a PYRRHULA.
Vieillot calls it COCCOTHRAUSTES *cærulea*.
Wilson errs in quoting Buffon's *pl. enl.* 154, which represents a different bird; the *cærulea* is not figured in that work.

82. * L. *enucleator*. Vol. i. p. 80. This bird, which is common to the northern regions of the

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two continents. It is a true PYRRHULA, forming the link between that genus and the following, and must, therefore, be called PYRRHULA *enucleator*, agreeably to Temminck.

SYNONYMES.

LOXIA *enucleator*, LINN. GMEL. LATH.
LOXIA *flamengo*, GMEL. (accidental variety.)
PYRRHULA *enucleator*, TEMM.
Gros-bec du Canada, BUFF. *pl. enl.* 135, *fig.* 1, (young male, bill unnatural.)

Wilson's figure also represents a young bird about one year of age. This species, unlike most other birds, gradually loses the brightness of its colour as it advances in age.

Cuvier made the genus CORYTHUS, and Vieillot that of STROBILOPHAGA, for the reception of this bird. But these are destitute of distinctive character, and are, therefore, inadmissible. The latter author, in his *Oiseaux de l'Amérique Septentrionale*, intended to call this species PINICOLA *rubra*, but he has since named it STROBILOPHAGA *enucleator*.

CURVIROSTRA.

A very natural genus, adopted by all the present ornithologists, and the only one that Wilson, in his excellent work, ventured to propose. It had also been adopted under the name of CRUCI-

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ROSTRA by Meyer, Daudin, and other authors. But as Brisson was the first to consider it a distinct genus, his name of LOXIA has, I think with great propriety, been restored to it by Illiger, Temminck, Vieillot, and others, who have removed to other genera, the species, which, notwithstanding their discrepance, Linne and Latham had referred to it. This genus includes but three species, which are limited to the northern regions of both continents, one of them being peculiar to North America. Of the two European species, one is found in this country, and I have but little doubt that the other is also an inhabitant of the higher latitudes of this continent, and that, from its resemblance to the preceding, it has been hitherto mistaken for the same. If this be correct, North America will then possess all the known species.

83. C. *americana*. Vol. iv. p. 44. I think Wilson was in error when he considered this bird a new species, and stated that it differs considerably from the European. He probably compared it with the L. *pytiopsittacus*, and not with the *curvirostra*, with which latter it is identical. Wilson's new name must, therefore, be rejected, and the name of LOXIA *curvirostra* must be restored to this bird. Our author was also incorrect in remarking that "the young males, as is usual with most other birds, very much resemble the female;" the fact is, that the young of all the cross-bills, as well as that of PYRRHULA *enucleator*, contrary to

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the habit of the generality of birds, loose their red colour as they advance in age, instead of gaining an additional brilliancy of plumage. The figure, which our author gives as that of an adult male, represents a young bird of about one year, and his supposed female is a remarkably fine adult male.

SYNONYMES.

LOXIA *curvirostra*, LINN. GMEL. LATH. TEMM.
Bec croisé d'Allemagne? BUFF. *pl. enl.* 218, (male about one year old.)

84. LOXIA *leucoptera*. Vol. ii. p. 48. The smallest of the genus, and peculiar to North America. Latham called it LOXIA *falcirostra*, but Gmelin's name, chosen by our author, having the priority, and being very appropriate, must be adopted. Wilson believed his figure to represent a male in perfect plumage, but it is only that of a young male.

SYNONYMES.

LOXIA *leucoptera*, GMEL.
LOXIA *falcirostra*, LATH.

EMBERIZA.

Although this genus is a very natural one, yet it is not at all understood; and naturalists, without consulting the characters, have referred to it numerous species that evidently do not belong to it. Even Linne, and principally Latham, placed many

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birds with EMBERIZA that have not the characters by which they indicate the genus, and although our author gives the true generic characters, yet he has not adhered to them in his arrangement, as I shall show by the following observations on his species. Of these he describes eight, hardly one of which in reality belongs to the genus, in my acceptation of it, being principally FRINGILLÆ, and decidedly more remote from EMBERIZA than some of the species which he correctly places under FRINGILLA. It may be proper to state in this place, that I have observed in this country the existence of an error emanating from Wilson himself, that the bill of the EMBERIZÆ is larger than that of the FRINGILLÆ, and thus offers the best distinctive mark between the two genera. In order to rectify this error, it is only necessary to repeat the characters of the genus EMBERIZA as originally given, and to exhort ornithologists to bear them in mind in their future arrangements.

Bill conic; mandibles receding from each other, from the base downwards, the lower with the sides narrowed in, the upper *narrower and with a hard knob within.*

Restricted within these limits, the genus is small but very natural, and though North America is celebrated for the number of her supposed EMBERIZÆ, I have not met with one of them that possessed the above characters in a prominent degree;

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and but for one doubtful species the genus EMBERIZA ought to be rejected from the American fauna.

85. E. *americana*. Vol. i. p. 54. This bird, which is peculiar to America, has been described by Gmelin and Latham under two different names in the genera EMBERIZA and FRINGILLA, as their F. *flavicollis* seems to be no other than an imperfect state of plumage owing to age. The *americana* is certainly not an EMBERIZA, and is evidently congeneric with some of Wilson's FRINGILLÆ, such as F. *melodia, savanna, socialis, passerina*, &c. For these birds I was about to propose the adoption of a new genus, under the name of SPIZA, (Greek appellation of the FRINGILLA *cælebs*) intermediate between FRINGILLA and EMBERIZA, but much more closely allied to the former. After an attentive examination of the intermediate species, I shall, however, consider it a subgenus under FRINGILLA.

This subgenus cannot be placed under EMBERIZA, for although some of the species have a rudiment of the hard knob, yet none of them have it sufficiently large and decided, and more particularly because they have not that essential external character of the upper mandible being narrower than the lower, which distinguishes EMBERIZA, that mandible being obviously wider than the lower, a character which induces me to place the subgenus under FRINGILLA, from the other species of which it differs only in having the edges of the lower mandible narrowed in, and the palate thick and

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rather prominent, instead of being scolloped and grooved. This new subgenus is very nearly the same as the genus proposed not long since by Vieillot under the name of PASSERINA. But in addition to the circumstance that this author placed in it some species that could not properly belong to it, he was wrong in stating that the principal discrepance between these birds and the EMBERIZÆ, being their not having the hard knob, they ought to be considered as EMBERIZA by those authors, who, like Linne (and Temminck,) do not take this character into consideration, regarding it as internal. The chief difference is, in fact, external, and consists in the comparative width of the upper and lower mandibles, as above stated. Notwithstanding this, I would not have thought myself authorized to change Vieillot's generic name of PASSERINA, was it not already occupied by a Linnean genus of plants.

The bird under consideration must, according to this innovation, be ranged under the subgenus *Spiza*, and be called FRINGILLA *americana*. Those who will not adopt the proposed subgenus, may scatter the species in the three other subgenera, according to the thickness of their bill, but they certainly must be banished from EMBERIZA.

SYNONYMES.

EMBERIZA *americana*, GMEL. LATH.
FRINGILLA *flavicollis*, GMEL. LATH.

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Bartram called it CALANDRA *pratensis*.
Vieillot, PASSERINA *nigricollis*.

86. E. *erythrophthalma*. Vol. ii. p. 35. This species is also peculiar to America, and is certainly not an EMBERIZA. Perhaps no bird has been more variously arranged than the present. Linne and Brisson placed it in FRINGILLA. Gmelin, Latham, and after them, Wilson, incorrectly referred it to EMBERIZA, and Vieillot, who in his large work figures the bill of this bird as that of a HORTULANUS, (which appellation he afterwards changed to that of PASSERINA) finally formed for this species alone his new genus PIPILO. In my opinion this latter genus must be rejected, and the species, which seems to me to have some analogy with F. *cardinalis*, must be referred to the subgenus *Coccothraustes*, under the name of FRINGILLA *erythrophthalma*, agreeably to Linne.

SYNONYMES.

FRINGILLA *erythrophthalma*, LINN.
EMBERIZA *erythrophthalma*, GMEL. LATH.
Brisson called it FRINGILLA *carolinensis*, and Vieillot, probably for the sake of changing, PIPILO *ater*.

87. E. *oryzivora*. Vol. ii. p. 48. This bird, which replaces here the E. *hortulanus* of Europe, is peculiar to America, but is certainly not an EMBERIZA. Wilson, on this occasion, has followed Linne, Gmelin, and Latham without examination. Vieillot refers this bird to PASSERINA, and Cuvier

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and Temminck to FRINGILLA. By examining the form of the bill, nares, feet, respective length of the remiges, and some of the habits, I am convinced that this bird is so closely allied to the following, that we cannot separate them generically; and since the following species has been so happily arranged under ICTERUS by Temminck, this species must also be placed under the same genus, in which, its specific name being pre-occupied, I propose for it the name of I. *agripennis*, thus translating one of its vulgar names, in order to add as little as possible to the confusion of synonymy. The same specific name must also be adopted by those who prefer retaining it in the genus FRINGILLA, the name F. *oryzivora* being already adopted for the LOXIA *oryzivora* of Linne. Wilson's account of this bird is admirable.

SYNONYMES.

EMBERIZA *oryzivora*, LINN. GMEL. LATH.

Ortolan de la Caroline, BUFF. *pl. enl.* 388, *fig.* 1, (adult male in spring.)

Ortolan de la Louisiane, BUFF. *pl. enl.* 388, *fig.* 2, (adult male, moulting; a bad figure.)

Brisson called it HORTULANUS *carolinensis*, and Vieillot, PASSERINA *oryzivora*.

89. E. *pecoris*. Vol. ii. p. 145. This also is not an EMBERIZA, and is peculiar to this continent. Gmelin and Latham considered it a FRINGILLA, and Wilson placed it in the present genus, probably only from its resemblance to some of the other

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species improperly placed here. The two former authors made also several nominal species of it, and placed them in ORIOLUS and STURNUS. Daudin called it ICTERUS *emberizoides*, and was followed by Vieillot, who represents the bill in the first volume of his large work; but this writer subsequently referred it to his genus PASSERINA. Temminck considers it an ICTERUS of the subgenus *Emberizoides*. This bird is certainly congeneric with the preceding; its bill, feet, nares and wings not differing at all in form: some of the habits, however, are very dissimilar; but if these ought to be our guide in classification, a distinct genus would be assigned to this singular parasitic bird. In my opinion this species is very well placed in ICTERUS; and must be called ICTERUS *pecoris;* and, by those who will not follow this course, FRINGILLA *pecoris*, agreeably to Gmelin and Latham. Nothing of the interesting history of this bird was known anterior to the appearance of Wilson's work.

SYNONYMES.

FRINGILLA *pecoris*, GMEL. LATH. (female and young.)

ORIOLUS *fuscus*, GMEL. (adult male.)

ORIOLUS *minor*, GMEL. (*species No.* 46,) LATH. (adult male.)

STURNUS *obscurus*, GMEL. (adult male.)

STURNUS *junceti*, LATH. (adult male.)

Troupiale de la Caroline, BUFF. *pl. enl.* 606, *fig.* 1, (adult male. This figure is, no doubt, intended for this bird, although the bill is incorrect.)

Brisson calls it FRINGILLA *virginiana*. Vieillot, PASSERINA *pecoris*.

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89. * E. *nivalis*. Vol. iii. p. 36. Common to the northern parts of both continents. As this bird is subject to great changes in the colour of its plumage, it has given rise to a multiplication of nominal species.

SYNONYMES.

EMBERIZA *nivalis*, LINN. GMEL. LATH. TEMM.
E. *montana*, GMEL. LATH. (young.)
E. *mustelina*, GMEL. (young.)
E. *glacialis*, LATH. (young.)
Ortolan de neige, BUFF. *pl. enl.* 497, *f.* 1, (adult male.)
Ortolan de passage, BUFF. *pl. enl.* 511, *f.* 2, (young female.)

Brisson called this bird HORTULANUS *nivalis*: Vieillot called it PASSERINA *nivalis*; but I cannot judge of his correctness, as I have not had an opportunity of ascertaining whether it has the knob; the external form of the bill, however, is so much that of a true EMBERIZA, that it cannot well be separated. Meyer made of this and another species his genus PLECTROPHANES, which I think proper to adopt as a subgenus under EMBERIZA.

90. E. *ciris*. Vol. iii. p. 68. This beautiful species, peculiar to America, is an inhabitant of the southern states. It is evidently a FRINGILLA, and must, therefore, be called F. *ciris*, agreeably to Cuvier and Temminck. I am at a loss to know why authors have arranged it under EMBERIZA. This bird and the one that Wilson so accurately called F. *cyanea*, belong not only to the same ge-

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nus, but are very closely allied, and may be placed under the subgenus *Spiza*, if they will not constitute a small one of themselves.

SYNONYMES.

EMBERIZA *ciris*, LINN. GMEL. LATH.

Tangaras de Cayenne, 1. *la femelle*, 2. *le mâle appelé le Pape*, BUFF. *pl. enl.* 159, (male and female, the latter bad.)

Brisson calls it CHLORIS *ludoviciana*, (*vulgo Papa dicta*) and correctly placed it in his genus PASSER, (corresponding to FRINGILLA.)

Vieillot calls it PASSERINA *ciris*. Bartram, that good observer of nature, was correct in considering it a Finch; and it is very extraordinary that Wilson, who adopted his name for the E. *cyanea*, did not do it also for the present species, as they are so similar in form and habits.

91. E. *leucophrys*. Vol. iv. p. 49. This bird is peculiar to the northern parts of this continent, and is rare in the United States. I do not know why Wilson in his catalogue changed the name to that of *leucocephala*. It must now be called FRINGILLA *leucophrys*, agreeably to Temminck. It belongs to the subgenus *Spiza*.

SYNONYMES.

EMBERIZA *leucophrys*, GMEL. LATH.

Vieillot calls it PASSERINA *leucophrys*.

92. E. *graminea*. Vol. iv. p. 51. This bird is also peculiar to this country. Wilson supposed it to be new, and Vieillot adopts the same name

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without acknowledging his author. Both of these authors express a doubt whether it is not the FRINGILLA *graminea* of Gmelin and Latham. I have no doubt of the identity of these two species. Vieillot says it may be the same bird; but in that case authors were wrong in placing it with the FRINGILLÆ. In this remark he was himself in error, since the bird is a true FRINGILLA, without a single character of EMBERIZA; and must be called FRINGILLA *graminea*, as formerly named by Gmelin and Latham.

SYNONYME.

FRINGILLA *graminea*, GMEL. LATH.

I do not know how Vieillot could arrange this bird in his restricted genus EMBERIZA, as he was, on other occasions, very particular in his reference of species to that genus, he ought, at least, on his own principles, to have placed it with his PASSERINA.

TANAGRA.

This genus, which is peculiar to America, has been very much restricted by some ornithologists. Vieillot divided it into seven or eight genera, but with Temminck I consider it as a whole, consisting of six subgenera, corresponding to his sections. The three species described by Wilson belong to the genus PYRANGA of Vieillot, which I shall adopt as a subgenus of TANAGRA.

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93. T. *rubra.* Vol. ii. p. 42. This handsome bird, so remarkable for its different states of plumage according to age and sex, has been described by European writers under at least two different names.

SYNONYMES.

T. *rubra*, Linn. Gmel. Lath. (adult male in full plumage.)

Loxia *mexicana*, *sp.* 7, Linn. Gmel. *sp.* 18, Lath. (adult male in full plumage.)

Tanagra *olivacea?* Gmel. Lath. (female in all states, and male young or in winter dress.)

Tangara du Canada, Buff. *pl. enl.* 156, *f.* 1, (male in perfect plumage.)

Vieillot calls it Pyranga *erythromelas*, Brisson, Cardinalis *Canadensis* (*Tanagra.*)

94. T. *æstiva.* Vol. i. p. 95. At least four nominal species, as our author correctly observes, have been made of this migratory bird, owing to its remarkable changes of plumage.

SYNONYMES.

Muscicapa *rubra*, Linn.

Tanagra *æstiva*, Gmel. Lath.

Tanagra *mississippensis*, Gmel. Lath. (adult male in summer dress.)

Tanagra *variegata*, Lath. (male changing.)

Loxia *virginica*, Gmel. (male changing.)

Tangara du Mississippi, Buff. *pl. enl.* 741, (adult male in summer dress.)

Vieillot calls it Pyranga *æstiva.* Brisson, Muscicapa *carolinensis rubra*, and his Cardinalis *mexicanus* (*Tanagra*)

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is probably no other. Klein calls this bird FRINGILLA *rubra*.

95. T. *ludoviciana*. Vol. iii. p. 27. Of this new bird, found by Lewis and Clarke in the western region, hardly any thing is known. Vieillot calls it PYRANGA *erythropis*, thus attempting to appropriate to himself Wilson's species, whose name must, however, be retained.

FRINGILLA.

Instead of having been restricted like other genera, this genus has been enlarged by the best modern writers, who have placed in it all the Linnean LOXIÆ, excepting only the cross-bills, together with the greater part of the EMBERIZÆ, and also a few species of supposed TANAGRA.

In this arrangement, Illiger, Meyer, Cuvier, and others have agreed; the latter author, however, has made a distinct genus under the name of CORYTHUS for a bird which he ought to have included in his subgenus *Pyrrhula*. Temminck separates, from the genus thus constituted, the subgenera *Ploceus* and *Pyrrhula* of Cuvier, the latter of which subgenera had previously been considered as a genus by Brisson; and on this occasion, as well as in many other instances, we are proud to agree with the ornithological oracle of our age.

Vieillot, besides the PYRRHULA, separated also from FRINGILLA, 1st, the COCCOTHRAUSTES of BRISSON,

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(Loxia of Linne) which, by his own confession, however, would be better arranged with Fringilla; 2d, Linaria, formed for F. *linaria*, Linn. alone, but without sufficient characters even for a subgenus; 3d, Passerina, more natural than the others, and with the exception of some of the species, ought, in my opinion, to be adopted as a subgenus, under a different name; it will principally include those species placed by Linne, Latham, and Wilson, under Emberiza, which being destitute of the hard knob, but principally having the upper mandible wider than the lower, cannot be permitted to remain in it; 4th, Pipilo, of which he ought, in my opinion, to have placed the only species, at least, in his genus Passerina.

In forming subdivisions of this very numerous genus, I shall not follow Cuvier, who makes eight subgenera, two of which, viz. *Ploceus* and *Pyrrhula*, with Temminck I consider as genera. Nor shall I adopt for these subdivisions the genera of Vieillot; but, taking the three subdivisions of Temminck, I shall consider his *Laticones* as a subgenus, under the name of *Coccothraustes*, agreeably to Cuvier; his *Brevicones* as a subgenus also, under the name of *Fringilla*, corresponding to Cuvier's three subgenera *Fringilla*, *Pyrgita*, and *Vidua*, the two latter having no stable characters; and his *Longicones* as a third subgenus, under the name of *Carduelis*, corresponding to Brisson's genus, and Cuvier's subgenus of that name. To

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these subgenera I will add a fourth, under the name of *Spiza*, corresponding, with some exceptions, to Vieillot's genus PASSERINA, including such species as have the edges of the lower mandible inflected. The species, however, of the latter subgenus, may be dispersed, by those who think proper, in the other subgenera, according to the thickness of their bills.

96. F. *tristis*. Vol. i. p. 20. This pretty bird belongs to the subgenus *Carduelis*, and has the same song and habits as the F. *carduelis* of Europe, which species it replaces here. It has been considered a distinct bird when in its winter dress, and improperly quoted as a variety of the F. *spinus* of Europe.

SYNONYMES.

F. *tristis*, LINN. GMEL. LATH.

F. *spinus*, var. γ GMEL. (male in winter plumage.)

Le Chardonneret du Canada, BUFF. *pl. enl.* 202, *fig.* 2, (adult male in full plumage.)

Tarin de la Nouvelle Yorck, BUFF. *pl. enl.* 292, *fig.* 1, (male changing) *fig.* 2, (male in winter dress, erroneously given as a female.)

Vieillot calls it F. *tristis*, and Brisson, CARDUELIS *americana*.

97. F. *purpurea*. Vol. i. p. 119, (the figure is that of an adult male in full plumage.) Vol. v. p. 87, (the figure is that of a male in winter plumage.) Wilson described this bird with his usual accuracy, and under its proper name, but was incorrect

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in asserting that the F. *rosea* of Pallas, and the Loxia *erythrina* of Gmelin (crimson-headed Finch of Latham) were one and the same with his bird. They are, in fact, two very distinct species, belonging to the genus Pyrrhula. The former is peculiar to Siberia, from which country it sometimes strays into the eastern parts of Europe, as far as Hungary, and the latter is common to the north of both continents, and will be represented in the first volume of my continuation of Wilson's Ornithology; while the present bird is a true Fringilla, forming one of the links between the subgenera *Coccothraustes* and *Fringilla*, and is peculiar to this continent.

SYNONYMES.

F. *purpurea*, Gmel. Lath.

Brisson called it Pyrrhula *carolinensis violacea*. Vieillot probably confounded this species with the P. *erythrina*, otherwise he would not have arranged it with the Pyrrhula; since, in his *Oiseaux chanteurs*, he gave the same bird as a new species from India, under the name of Loxia *rosea*, which he afterwards changed to that of Coccothraustes *rosea*.

98. F. *pusilla*. Vol. ii. p. 121. This is the species, peculiar to America, which comes nearest to Emberiza; so much so that I at first thought to range it under that genus. The specific name *pusilla* being pre-occupied in the latter genus, I was disposed to call it E. *locustella*, a name taken from its voice, which is similar to the chirpings of

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a cricket. But its great resemblance to the other *sparrows* of Wilson led me to leave it in the genus FRINGILLA, forming the link between EMBERIZA and my subgenus of FRINGILLA, *Spiza*.

SYNONYMES.

Bartram called it PASSER *agrestis*. Vieillot, PASSERINA *pusilla*, but he certainly did not examine the bird closely, otherwise, agreeably to his principles of classification, he would have placed it in EMBERIZA, as it has the hard knob of the upper mandible. It is possible that Gmelin and Latham had this bird in view (confounding it with another) when describing their E. *cinerea*. As to the E. *pratensis* of Vieillot, I am at a loss to say what it is.

99. F. *arborea*. Vol. ii. p. 123. The name of *Canadensis*, adopted by Latham, must be restored to this species, as originally given by Brisson. It is peculiar to America, and belongs to the subgenus *Spiza*, or, perhaps, to that of *Fringilla*.

SYNONYMES.

FRINGILLA *monticola*, GMEL.

FRINGILLA *canadensis*, LATH.

FRINGILLA *hyemalis?* GMEL. LATH.

Moineau du Canada, BUFF. *pl. enl.* 223, *f.* 2, (a very bad representation.)

Brisson called it PASSER *canadensis*. Vieillot, PASSERINA *monticola*. Wilson has thus given a new name to a bird that was already superabundantly provided.

100. F. *melodia*. Vol. ii. p. 125. This bird is peculiar to this continent, and belongs to the sub-

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genus *Spiza;* it has the rudiment of the knob, which character would make it approximate to EMBERIZA, were it not for the width of the upper mandible. Although Wilson's specific name is grammatically incorrect, yet it must be retained, as we have no right, in my opinion, to change any specific name whatever. Vieillot ranged this bird under PASSERINA, and changed Wilson's name to that of *musica*, which, in good Latin, signifies what Wilson intended; but, notwithstanding this, as I have before observed, Wilson's name must be retained.

SYNONYME.

FRINGILLA *fasciata?* GMEL. LATH.

If this synonyme was not doubtful, and if it would not be necessary to change the specific appellation of a pretty African species, the LOXIA *fasciata* of Gmelin and Latham, I should have restored to this species that name, in order to eliminate Wilson's ungrammatical one.

101. F. *socialis.* Vol. ii. p. 127. This pretty and familiar little species is also peculiar to America, and was first made known by Bartram, who called it PASSER *domesticus*, a name which is preoccupied in this genus. Vieillot calls it PASSERINA *socialis*, retaining Wilson's very appropriate specific name. This species belongs to the subgenus *Passerina*, and has a slight rudiment of the knob.

102. * F. *nivalis.* Vol. ii. p. 129. This name

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is correct; the species is common to both continents, but is as rare and limited in its range in Europe, as it is common and widely extended in North America. The name of *hudsonia*, which Wilson substitutes in his catalogue, and which has consequently been adopted in the reprint of 1824, is only an additional name for the same species.

SYNONYMES.

FRINGILLA *nivalis*, LINN. GMEL. LATH. TEMM.

EMBERIZA *hyemalis*, LINN. GMEL. LATH.

FRINGILLA *hyemalis*, LINN. *Syst. Nat. ed.* 10, (*N. B.* not of Gmel. and Lath. which is an incomplete state of the F. *arborea* of Wilson.)

FRINGILLA *hudsonia*, GMEL.

FRINGILLA *nortoniensis ?* GMEL. LATH. (young.)

This bird belongs to the subgenus FRINGILLA, though Vieillot calls it PASSERINA *hyemalis*. Bartram gave it the name of PASSER *nivalis*. Brisson, who was so correct in considering as varieties of E. *nivalis* those in different states of plumage, that other authors regarded as species, erred in the opposite extreme in making of this bird also a variety of the EMBERIZA *nivalis*, calling it HORTULANUS *nivalis niger*.

103. F. *pinus*. Vol. ii. p. 133. This species, which Wilson first described, named, and figured, is peculiar to this continent. Our author's name must, therefore, be retained. The species belongs

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to the subgenus *Carduelis*, and is allied to the F. *spinus* of Europe.

104. F. *albicollis*. Vol. iii. p. 51. This handsome species is peculiar to America; it belongs to the subgenus *Fringilla*, and has been considered as such by Vieillot himself. It has been described by European authors under different names, of which that of *albicollis*, though more appropriate, must be rejected, and that of *pensylvanica* of Brisson, having the priority, must be adopted, agreeably to Latham.

SYNONYMES.

FRINGILLA *pensylvanica*, LATH.
FRINGILLA *albicollis*, GMEL.
FRINGILLA *striata*, GMEL. LATH. (young.)
Brisson first named it PASSER *pensylvanicus*. Bartram called it F. *fusca*.

105. F. *palustris*. Vol. iii. p. 49. Peculiar to North America, and first noticed by Bartram, who called it PASSER *palustris*. It belongs to the subgenus *Spiza*, approaching by the slender form of the bill to the subgenus *Carduelis*. Vieillot calls it PASSERINA *palustris*.

N. B. The bill in Wilson's figure is very incorrect, being much more robust than in nature.

106. F. *maritima*. Vol. iv. p. 68. A new species of Wilson peculiar to America, where it is confined to the sea shores. Vieillot calls it PASSERINA *maritima*, but I cannot say with what reason.

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107. F. *caudacuta.* Vol. iv. p. 70. Wilson believed this bird to be new; but it is no other than the Oriolus *caudacutus* of Gmelin and Latham. This fortunate coincidence in the name is owing to a suspicion our author entertained of the identity of his bird and the F. *caudacuta* of Latham. But as they are, in reality, two different species, our author's specific name ought to be changed, were it not for another fortunate circumstance, which is, that Latham's F. *caudacuta* is probably a nominal species. It is, therefore, to be hoped, that Wilson's name can be permitted to remain. This bird is very closely allied to the preceding, with which it may constitute a small distinct subgenus.

SYNONYME.

Oriolus *caudacutus*, Gmel. Lath.

For this synonyme I am indebted to Mr. Ord, who has recently inserted it (sharp tailed Oriole) in the reprint of 1824. Vieillot gives it the name of Passerina *caudacuta.*

108. F. *savanna.* Vol. iv. p. 72, (male.) Vol. iii. p. 55, (female.) This new species of Wilson is peculiar to this continent, and belongs to the subgenus *Spiza.* Vieillot calls it Passerina *savanna.* It is to be regretted that our author gave to this bird a name so similar to that of another species, the F. *savannarum*, Gmel., more especially as

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in the English language the two names are identical.

109. F. *rufa*. Vol. iii. p. 53. Wilson adopted Bartram's name, but he afterwards corrected himself, by calling it F. *ferruginea* in his catalogue. It is probably owing to a typographical error that the species is there marked as new. I agree with Wilson that the species is both the F. *ferruginea* and EMBERIZA *ferruginea* of authors; but as other writers are of the contrary opinion, we must select, amongst the numerous synonymes of this species, one the least doubtful, and we shall find that the name of F. *iliaca*, having been given by Merrem in 1786, must be adopted. It is not surprising, however, that Wilson should not have discovered this synonyme, as authors have erroneously stated the length to be seven and nine inches. It has the appearance of being a large bird, and is, in fact, the largest of the American species that have been considered as sparrows. Its size has been stated to be equal to that of the Starling, and having only the dried skin, authors may perhaps have resorted to the measure of that bird for this. It belongs to the subgenus FRINGILLA.

SYNONYMES.

FRINGILLA *iliaca*, GMEL. LATH.
FRINGILLA *ferruginea*, GMEL. LATH.
EMBERIZA *ferruginea?* GMEL. LATH.

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EMBERIZA *cinerea?* GMEL. LATH. (This is, in my opinion, a confused description and history of the present species, and the FRINGILLA *pusilla* of Wilson.)

Vieillot, in the *Nouveau Dictionnaire d'Histoire Naturelle*, calls this bird F. *iliaca*, and gives a very good description of it, correcting also the error of its length, which is in reality but six inches. The EMBERIZA *pratensis* of the same author, in respect to which he corrects so many errors of other writers, seems to me to be also no other than the F. *iliaca*, and I am led to think that Vieillot did not speak of it autoptically. Edwards' figure of the "*little Sparrow*" may be intended for this bird, but, if so, the figure is too small. It is remarkable that Vieillot has not mentioned the length of his E. *pratensis*. But be these conjectures as they may, the species is well fixed by Wilson's excellent figure, and the E. *pratensis* does not, to my knowledge, exist in nature.

110. *F. *linaria*. Vol. iv. p. 42, and Vol. ix. p. 126. This pretty bird is common to the north of both continents, and belongs to the subgenus *Carduelis*. Vieillot makes a genus for it alone, as his second species is merely a variety of size.

SYNONYMES.

F. *linaria*, LINN. GMEL. LATH. TEMM.
F. *flavirostris*, LINN. GMEL. LATH.
Le *Cabaret*, BUFF. *pl. enl.* 485, *fig.* 2, (male.)
Wilson errs in quoting, as a synonyme, the *Planch. enl.*

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151, *f.* 2, which is a fine adult male of the European F. *cannabina*.

111. F. *passerina*. Vol. iii. p. 76. This species, which Wilson regarded as new, belongs to the subgenus *Spiza*, and is one of those which have the knob strongly marked. A better classification of the great genus FRINGILLA is certainly wanting, but, in my opinion, the following species of Wilson, EMBERIZA *americana*, E. *leucophrys*, FRINGILLA *socialis*, *passerina*, *melodia*, *savanna*, &c. can never be separated in any natural arrangement.

SYNONYMES.

FRINGILLA *caudacuta?* LATH. (young.)
FRINGILLA *savannarum?* GMEL. LATH. (very old male.)

If this latter synonyme were not doubtful, the species ought to be exclusively known by that name which has the priority, or by that of Brisson, who calls it PASSER *jamaicensis*. The PASSERINA *pratensis* of Vieillot, though given as a new species, is evidently this bird. He is, therefore, censurable for not quoting Wilson, whose work he had, doubtless, constantly before him. If the statement of Vieillot were correct, that the only difference between FRINGILLA and EMBERIZA was in the hard knob, this species he ought to have arranged in EMBERIZA; but the principal difference is, as I stated above, in the external form of the bill.

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112. F. *cyanea*. Vol. i. p. 100. Wilson exhibited his usual accuracy, by placing this bird in the genus FRINGILLA, although it had previously been arranged in TANAGRA and EMBERIZA. It is peculiar to this continent. Its various changes of plumage have given rise to the introduction of several nominal species.

SYNONYMES.

TANAGRA *cyanea*, LINN.
EMBERIZA *cyanea*, GMEL. LATH.
EMBERIZA *cyanella*, GMEL.
EMBERIZA *cærulea*, GMEL. LATH. (male moulting.)
TANAGRA *cærulea*, GMEL. LATH.
Moineau bleu de Cayenne, BUFF. *pl. enl.* 203, *f.* 2, (adult male in full plumage.)

Vieillot calls it PASSERINA *cyanea*. Brisson, TANGARA *carolinensis cærulea*, and (in its imperfect state) EMBERIZA *canadensis cærulea*. Bartram, LINARIA *cyanea*, having discovered its alliance with FRINGILLA, which probably led Wilson to call it F. *cyanea*.

The species is so closely allied to the EMBERIZA *ciris*, that it is impossible to think by what reason our author, who followed nature in the present case, followed writers in the other. They are not only of the same genus, but evidently of the same subgenus, (*Spiza*,) and might, perhaps, together, form a small distinct one.

[TO BE CONTINUED.]

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Description of the Os Hyoides of the Mastodon. By John D. Godman, M. D. *Lecturer on Anatomy and Physiology.*

[read June 8, 1824.]

The Os Hyoides is one of the few parts of the bony system, belonging to this interesting genus, which has not yet been described.

The specimen, from which this description is made, consists of the whole of the basis, with the appendix and cornu of the left side. The appendix and cornu of the right side were either not found originally, or have been lost since the erection of the fine skeleton in the Philadelphia Museum, to which this os hyoides belonged. But as we have the left side nearly entire, with the whole of the basis or central anterior portion, there is no difficulty in forming a sufficiently accurate idea of the character of this bone.

The figure of the basis bears a considerable resemblance to the ordinary shape of the os hyoides in man and other animals at the anterior part, being curved at the extremities, so that both the outside and inside of the bone have a semicircular outline.

The basis or anterior portion is thick, strong, and convex externally; the whole surface, especially in the centre, being rough and irregular, as if for the attachment of muscles. At the upper

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and anterior part, the rough bone rises in the centre about the eighth of an inch above the convexity of the inside of the bone, having, at both extremities, a groove which is perceptible nearly all round at the base of this projection.

On the inside of the basis, and immediately below the projection at the upper edge, the surface is rounded and smooth, having no other markings than slight furrows for nutritious vessels; the thickness increases until within half an inch of the lower edge, where there is a projecting line which forms an irregular semicircular sweep towards both the articulating surfaces. A little to the right of the centre of this line, a depression commences, which is about an inch in length, and gives the greatest degree of depth to the inside of the basis, as will be seen in the subsequent measurements.

The articulating surfaces both descend below the level of the body of the basis, so that if the bone be placed on a plane, and inclined backwards, it is supported on these extremities, forming an arch, whose centre is that of the depression before noted. When the basis is placed fairly on a plane, it rests on one obliquely flattened inferior surface, and we may form some idea of the obliquity of the direction of the whole os hyoides, supposing the appendix and cornu to be properly attached.

The articulating surfaces are rough, that of the right side most so; both are obliquely curved in-

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wards toward the upper edge of the bone; the right side presenting most of this obliquity. The upper edge of the right articulating surface projects more than the left, forming at its anterior part an evident tuberosity.

The appendix of the os hyoides has, at its anterior extremity, a deep and rough surface, the cavity appearing as if an epiphysis had been broken off.* This extremity is placed obliquely on the extremity of the bone, the outer part of which, in approaching the basis, forms an inclined plane of an inch and a half in breadth on its upper surface, gradually blending with the middle line of the bone on the outside. Below this, the bone is flattened toward the perpendicular, being continuous with the lower edge of the whole shaft. The upper edge of the appendix, at a short distance from the anterior articulation, becomes gradually sharp, and this sharpness increases till it ends at the posterior articulation. The outside of the appendix is regularly convex, until within three inches of the posterior extremity, where it expands to more than twice the breadth of the shaft. The inside of the appendix is compressed at the centre of the shaft, entirely flattened, and slightly concave from within

* The appearance of the extremities of the basis and appendix is such as to induce the belief that an epiphysis has been removed from each. There is no data on which we can found an opinion of the exact amount of substance lost, although it is probable that from one to three inches have thus been removed from the total extent of the os hyoides.

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three inches of the posterior, and also flattened at the anterior extremity, except where the articulating surface is strengthened by the bone being continued for the distance of two inches, projecting at first about the fourth of an inch, and terminating imperceptibly in the sharp inferior edge of this bone.

The figure of the posterior extremity of the appendix is that of about one-third of an irregular segment of a circle, two inches in diameter; the inferior part being the most regular; the superior being broader and rougher, and terminating above in a round and smooth tuberosity. Immediately below this, there is on the outer surface a curved indentation, apparently forming a part of a small articulating surface at the upper and outer portion of the posterior extremity of the appendix.

The cornu differs from the base and appendix by having but one articulating surface on its anterior extremity, which is irregularly triangular, deep, and unequal. Immediately behind the articulation it is almost cylindrical, but gradually grows flatter towards the inferior edge, terminating at length by a broad and flattened surface, two inches and a half from the articulation, curving inwards slightly at the inner edge. The rest of the cornu forms a considerable angle with this part of the bone, rising upwards, gradually becoming smaller, continuing to the posterior extremity thinner on its lower, and rounded on its upper surface. On the inside, and near the posterior part,

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the inner surface rises so as to form a prominent line. The whole of the basis, appendix, and cornu, have not been fossilized, but still retain the characters of bone.

I am indebted to Mr. Rembrandt Peale, who was particularly engaged in the exhumation of the two most perfect skeletons of the Mastodon that have yet been obtained, for the following interesting particulars. The morass, which contained the Mammoth bones, was sounded by means of long pointed rods, shod with iron. On the removal of the mud, after finding some resistance made to the rod, an entire under jaw bone was discovered, over the top of which the scapula of the animal was so placed as to form a covering to the space between the rami of the jaw. When the scapula was raised, the bones of the os hyoides were found lying within the jaw, thus being protected from the effect of the fluctuations which had scattered the other small bones to various distances, previous to the hardening and fixing of the mud.

Measurements of the *basis*.—From the commencement of one articulating surface to the other, over the middle of the bone, on the outside, four inches and three-eighths.

In like manner on the inside, three inches and five-sixteenths.

Depth of the bone measured in the centre on the inside, one inch and a half.

——— on the outside, one inch and one-eighth.

Height of right articulating surface, one inch and three-eighths.

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Breadth of the same, seven-eighths of an inch.

Perpendicular height of left articulating surface, one inch and one-eighth.

Diagonally, from the upper and inner to the lower and anterior edge, one inch and three-eighths.

Length of the *appendix*, seven inches and three-eighths on the outside.

——— on the inside, six inches and a half.

Height of anterior articulating surface, one inch and five-eighths.

Breadth, one inch and one-eighth.

Posterior articulating surface, measuring the whole semi-circle, two inches and seven-eighths.

Breadth of the same, seven-sixteenths of an inch.

Circumference of the appendix in the centre, two inches and one-eighth.

Breadth of the appendix (externally) behind the anterior articulating surface, one inch and eleven-sixteenths.

Breadth, (externally) just before the posterior articulating surface, one inch and thirteen-sixteenths.

Length of the *cornu*, eight inches and one-sixteenth on both sides.

Breadth through the angle, one inch.

Circumference midway between the angle and articulation, one inch and a half.

——————— midway between the angle and extremity, one inch and one-sixteenth.

At the posterior extremity, five-eighths of an inch.

PLATE II.—OS HYOIDES OF THE MASTODON.

Fig. 1. Basis, front view, 2-3 nat. size.
2. Appendix, „ „
3. Cornu, „ „
4. Sketch of bones in natural position.

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Description of a testaceous formation at Anastasia Island, extracted from notes made on a journey to the southern part of the United States, during the winter of 1822 *and* 1823. *By* R. Dietz.

[read June 8, 1824.]

Anastasia Island, opposite St. Augustine, along the coast of East Florida, is about 10 or 12 miles from north to south, and about 1½ miles from east to west, and has, perhaps, not more than 10 or 12 feet elevation above the level of the ocean, and is from 2 to 3 miles distance from the shore.

A considerable portion of the northern, and, perhaps, the substratum of the remaining part of the island, is composed of an aggregate of fragments of various shells. This occurs in horizontal stratified layers, which easily separate into slabs at certain horizontal divisions, owing to some foreign matter very thinly interposed between the layers, which prevented their conglutination. These layers are from an inch to a foot and a half in thickness. The fragments of shells, composing them, are of various sizes, some larger, and some smaller: sometimes even fragments of various sizes, together with some entire shells, occur in one and the same layer.

Previously to being exposed to the air, any cutting tool will easily penetrate, and in that state the slabs are at once cut to the size required. When

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exposed to the air, they gradually become indurated, and this appears also to happen when they are exposed to the action of sea water.

This rock, if so it may be called, has been made use of in the neighbourhood of St. Augustine since about the year 1565. The Fort St. Mark, at St. Augustine, is built of this material, cut in square blocks of about two feet and a half long, two wide, and one thick. The church, the government-house, and the Keys along the sea shore, are constructed of it.

It is considered well calculated for the use of fortification; as, by its spongy nature, it will receive the balls, without permitting them to pass through or glance off, and without being shattered to pieces.

When we consider the particles of this aggregated mass, and compare the smaller with the larger grained varieties, we find the smaller grained more homogeneous: the larger grained contain often some foreign matter, perhaps the gelatinous remains of the fossil shells? in its cavities. There is a more distinct sparry arrangement, characteristic of fossil, in the smaller than in the larger grained variety. On the surface of the particles of the small grained variety, not unfrequently a kind of confused crystallization is apparent. There are even some of the small grained layers, where, by the intermixture of such crystallization, the particles are in so close contact, that the appearance of shell is, if not quite obliterated, at least,

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but very obscure. The larger grained varieties are composed of some particles evidently fossil, of others, where the fossil character is doubtful, and of some that have even not yet lost their colouring matter.

The accumulation, the gradual increase, and the stratigraphical arrangement of this shell mass, on a more minute examination, appear to have been the result of the agitation of the tides and winds. A quantity of shells, continually carried by the regular tides towards the shore, and carried off again by the constant repulsion of the waves, and the retiring tides, have been deposited at no great distance from the shore. Indeed, every reef and sand-bank along the sea shore appears to be of the same origin. At times, such shells must have been considerably fractured, if, before being deposited there, they were subject to the more violent action of both the winds and tides, combined towards the same quarter, by which they were thrown up and superadded to the accumulated mass. Finally, the smallest triturated shells must be the product of the two agitating powers, counteracting one another.

Thus every change in these perpetually agitating agents, created and deposited such fragments as resulted from the efficacy of their respective powers, either larger, smaller, or mixed particles. Yet it may naturally be supposed, that such fragments as were carried up by the counteracting violence of winds and tides, and thus de-

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posited as the uppermost layers, must have been triturated into very small particles: as also, that the lowermost depositions, not having been so much subject to the violent agitation of winds and tides, must mostly consist of the largest fragments and entire shells. Between these lowermost and uppermost layers, a gradual transition from the coarse to the fine grain must necessarily exist: for the particles nearer to the lower deposition, having suffered less agitation, must be larger; whilst those deposited above, having required a more violent action of the winds and tides to raise them to the place where they are deposited, must have been more fractured. By occasional hurricanes, however, even large entire shells were thrown up, and thus deposited amongst the uppermost smaller triturated particles.

Those minute quantities of foreign matter, probably vegetable substance, may have been deposited between every two layers, without interruption of time, by an incidental high tide, which now and then overflowed the adjacent lands, and which, on retiring, carried that matter with it.

In that manner, this mass of various shell fragments was heaped up, strata after strata, as high as the highest spring tide could ever attain.

This theory, not requiring any far-fetched extraordinary phenomena, founded only upon the daily occurrences in that region, appears further confirmed, if we may judge, 1st, by the materials

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that have been used to build the fort and other ancient buildings of St. Augustine, all probably taken from the very surface, as but very slight excavations are found on the island; the uppermost layers must have been the smallest grained, and certainly smaller than those below them. 2d, In the more recent excavations, the lower strata are generally larger grained, and those above them smaller grained. As to the lowermost depositions, not yet laid open to our view, the state of that island does not admit of a closer examination, and of course this must remain a problem, subject to future researches.

On viewing these specimens out of place, it might appear as if they owe their various degrees of consistency, and their more or less advanced fossil state, to their different ages; yet, on examining the local arrangement in which this conglomerate is deposited, as before stated, it will be found, that the more compact degree of its consistency, and its more advanced fossil state, does not depend on the greater length of time of its having been deposited: for those layers, composed of the smaller triturated fragments, which are of a more solid consistency, and in an entire fossil state, generally accompanied by an apparent confused crystallization, are the uppermost, and of course the last and most recent of the series of depositions. We may thus fairly conclude, that the crystallizing and petrifactive causes, both,

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perhaps, influenced by electricity, are more active above than beneath the level of the sea.

We can hardly doubt but that this mass is an embryo of a future shell-marble. And why may not we infer that those beautiful secondary shell-marbles, the Lumachella from Bleyberg, Carinthia; the Irish Kilkenny; the French Griotte; the variegated limestone in the neighbourhood of Hudson, N. Y. and so many others, the origin of which has given rise to so numerous hypotheses, have really no other origin than that which we have just described.

By permission of my very esteemed and learned friend Mr. Thomas Say, I add, as a valuable addition to the above paper, his notes of various shells composing that aggregated mass, viz.

Fossil shells found in a shell mass from Anastasia Island.

1. ARCA *pexata*, nobis. It is not a little singular that this shell, and the six next following, so common on our coast at the present day, should be found here in a fossil state.

2. ARCA *ponderosa*, nobis. This shell also, which is very common in the fossil state, is found recent on the southern coast. But I have not found any fossil specimens so large as a recent one in my cabinet.

3. ARCA *incongrua*, nobis. Several small fragments of a shell, which I believe to have been identical with the recent species of this name, occurred in the mass.

4. ARCA *transversa*, nobis. A tolerably perfect young shell, and many fragments of full sized individuals; but this species is not so abundant as either of the preceding.

5. LUTRARIA *canaliculata*, nobis. Three small portions of

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the hinge margin of a species, which I believe to be the *canaliculata*. The greatest part of this shell is so thin, that we are not surprised that it should have been comminuted; we should, however, expect to find part of the umbo and the entire hinge fosset, but no trace of either has as yet been discovered.

6. MACTRA. Numerous fragments of a small species which is probably M. *lateralis*, nobis. All the specimens, however, when perfect, must have been smaller than the average size of those now existing on our shores.

7. DONAX. Fragments of a species of this genus seem to be next, in point of frequency, to those of the ARCÆ, and few were obtained nearly entire; as far as I could judge, by comparison, the species is the same with the D. *variabilis*, nobis. Some of the fragments have not yet altogether lost the fine purplish colour of the inner side of the shell.

8. CREPIDULA. A single specimen, too imperfect to admit of a specific decision.

9. LUCINA. A single, young, and imperfect specimen.

10. ARCA. Besides the species of Arca above enumerated, there are some fragments of another species, probably now extinct upon our coast, or, if still existing, extremely rare. It is possible this may prove to be the A. *candida*, GMEL. as it has intermediate smaller striæ towards the anterior end.

Fragments of several other shells were obtained from the mass, but they were too imperfect to justify even the hazard of a conjecture respecting their affinity. It will be observed that all the species here mentioned are bivalves, not the smallest determinable portion of a univalve was observed: from which circumstance we may conclude that the island is almost exclusively formed of bivalve shells, and chiefly of the genus ARCA.

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In a small mass in the possession of Dr. Hays, I observed a young indeterminable species of the genus NATICA, and two specimens of a small OLIVA, also too imperfect to be determined. A mass in the Philadelphia Museum contains a fragment of NASSA *trivittata*, nobis.

Description of a new species of Fish of the Linnean genus PERCA. *By* J. GILLIAMS.

[READ AUGUST 3, 1824.]

Angling some weeks ago in one of the fish ponds at Harrowgate, I had the good fortune to take three individuals of a species of Linnean PERCA that was altogether new to me, and on reference to the works of the principal authors who have written on the science of Ichthyology, I have not been able to find any notice whatever of this species. I may further state the somewhat remarkable fact, that although many persons have angled frequently in the same pond, yet this fish was not known to have been previously caught there, and being desirous of securing more specimens, I have frequently since endeavoured to obtain them, but without success.

The following is a description of this new species.

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SCOLOPSIS, *Cuvier.*

S. *Sayanus*, pl. iii. *Body* oblong, thick: *head* above, destitute of scales, and much grooved: the *mouth* of moderate size, scarcely reaching to the line of the anterior canthus of the eye: *jaws* nearly equal; the inferior a little longer; both of them, together with the palate, furnished with very numerous, conic, somewhat incurved teeth: *eyes* of moderate size; the suborbitals spinous on both edges: *preoperculum* serrated in its posterior angle; the posterior segment serrated with numerous spines, excepting at its superior and anterior terminations: *operculum* rather large: *back* gradually a little elevated from the upper jaw to the commencement of the dorsal fin, from which point it declines to the termination of this fin: *tail* deep, and not suddenly contracted beyond the body: *lateral line* very slightly arquated from its origin to its termination: *pectoral fins* obovate, and not extending quite as far as opposite to the tip of the ventrals: *ventrals* rounded at the tip, reaching hardly half the distance to the origin of the anal fin: *anal fin* prominent and rounded; the first spinous ray very short; second, half the length of the soft rays: *dorsal fin* very short, being not longer than the interval between its termination and the origin of the caudal fin; the first spinous ray very small, scarcely half the length of

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the second, which is half as long as the third, and the latter is about half the length of the fourth; the soft rays are about one-third longer than the fourth spinous ray: *caudal fin* rounded: *scales* rounded, ciliated: *colour*, above blackish-brown, becoming paler towards the inferior surface, which is light yellowish; fins, excepting the ventrals, dusky.

B. 6. P. 10. V. 7. A. 27. D. 4 hard and 12 soft. C. 17.

Total length four inches and a half.

It is somewhat difficult to determine to which of the genera, in the modern systems, this species belongs. Its naked, grooved head, led me at first to refer it to the genus ACERINA of Cuvier, but the strong character of the spinous suborbital, agreeing very well with SCOLOPSIS of the same author, I have referred it, without hesitation, to that genus.

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Descriptions of COLEOPTEROUS INSECTS *collected in the late Expedition to the Rocky Mountains, performed by order of Mr. Calhoun, Secretary of War, under the command of Major Long. By* THOMAS SAY, *Zoologist to the Expedition.*

[READ OCTOBER 22, 1823. Concluded.]

ALTICA, *Geoff. Latr.*

1. A. *gibbitarsa.* Rufous; antennæ black; elytra green; thorax spotted.

Inhabits Missouri.

Body rufous, glabrous, ovate: *head* with an impressed, frontal line: *antennæ* blackish: *thorax* three-spotted; dorsal spot double; lateral ones smaller and rounded: *scutel* purplish-bronze: *elytra* green, polished; punctures obsolete, irregular: *beneath* yellowish-rufous: *thighs* rufous: *tibia* and *tarsi* blackish; terminal joint of the posterior tarsi very gibbous, almost spherical near the claws.

Length less than one-fourth of an inch.

2. A. *vians.* Thorax yellowish, with a transverse, black spot; head and elytra black.

Inhabits the United States.

Altica vians. Knoch in Melsh. Catal.

Head black: *thorax* yellowish; a transverse, black spot, not undulated, occupying nearly all the disk: *elytra* greenish-black, with minute, equidistant punctures: *beneath* black: *pectus*, on each

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side, excepting a small black spot, yellowish: *venter* margined with rufous: terminal joint of the posterior tarsi gibbous near the claws.

Length nearly one-fourth of an inch.

3. A. *scripticollis.* Black; thorax yellowish, with a transverse, undulated spot; venter yellow.

Inhabits Missouri.

Body oval, black, glabrous, minutely punctured: *head* with a transverse, rufous, frontal spot, and another very small one at the base of each antenna: *thorax* yellow; a transverse, undulated spot occupying more than two-thirds of the transverse diameter: *scutel* impunctured, rounded at tip: *elytra* black, immaculate: *pectus* yellowish: *venter* pale yellowish; terminal joint of the posterior tarsi gibbous near the claws.

Length nearly one-fourth of an inch.

Very like the preceding, but may be distinguished by the frontal spot, and by the undulated, litterate form of the thoracic spot.

4. A. *triangularis.* Black; thorax yellowish, with three black points placed triangularly.

Inhabits Missouri.

Body oval, black, glabrous: *thorax* yellowish, with three black points placed triangularly, the two anterior ones orbicular, the posterior one linear, very short: *elytra* violaceous-black, and, as well as the thorax, minutely punctured: *pectus*, excepting the origin of the feet, yellow; terminal joint of the tarsi simple.

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Length about one-fourth of an inch.

Remarkable by the triangular position of the black thoracic points.

5. A. *bimarginata.* Blue; thorax with an impressed, transverse line; elytra with a much elevated line near the margin.

Inhabits Missouri.

Body oblong-oval, blue, minutely punctured: *antennæ* black: *thorax* with an impressed, transverse, rectilinear line behind the middle, attaining the lateral margins, and another impressed line before, which is interrupted in the middle and abbreviated each side: *elytra* with an elevated, submarginal line each side, originating on the humerus, and nearly parallel with the exterior edge.

Length from one-fifth to one fourth of an inch.

The posterior thighs are much less dilated than those of *collaris*, Fabr.

6. A. *5-vittata.* Yellowish; thorax four or five-spotted; elytra five-lined.

Inhabits Missouri.

Body oblong-oval, yellowish, glabrous: *antennæ* black; three basal joints rufous beneath: *thorax* with an abbreviated, black line on the middle of the posterior submargin, and a semicircular series of four equal, equidistant, suborbicular, black spots; posterior edge concave at the scutel: *scutel* black: *elytra* with a common sutural fillet; each elytron with a fillet originating at the humerus, and terminating near the tip, and another marginal, less

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dilated fillet confluent with the sutural vitta at tip; region of the origin of the posterior feet black: *thighs* rufous: *tarsi*, and a line on the superior edge of the two anterior pairs of thighs, together with a line on the inferior edge of the tibia, black.

Length more than three-tenths of an inch.

The arrangement of the lines of the elytra are similar to those of A. *caroliniana*, Fabr. The head is sometimes black at base, and the two intermediate thoracic dots are confluent.

Found in considerable numbers on the common Elder (Sambucus,) and some other plants. On the evening of the 16th of June, I observed great numbers of these flying in a south-east direction from near St. Louis, obliquely across the Mississippi towards an island, the wind at the same time blowing moderately from the eastward; the subsequent evening, about the same hour, they returned by the same route reversed, the wind directly opposing them; both of these days were very warm. During our progress up the Missouri river, I observed, several times, similar migrations of this species.

7. A. *nana*. Cupreous or brassy, polished; beneath blackish; antennæ and feet rufous; elytra striate.

Inhabits the United States.

Body green, cupreous or golden, polished, punctured: *head* impunctured: *antennæ* rufous; second joint nearly as long as the third: *eyes* brown: *tho-*

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rax with numerous irregular, large punctures; a transverse, impressed, conspicuous, rectilinear line behind the middle, near the lateral margin abruptly reflected backwards, and terminating at the basal edge; edge blue: *scutel* violaceous: *elytra* with impressed striæ, in which are large, profound, quadrate punctures; edge blue: *beneath* black: *feet* rufous.

Length about one-tenth of an inch.

Seems to be closely allied to A. *helxines*, but the posterior thighs are never black, as those of that insect are described to be.

8. A. *picta*. Sanguineous; elytra blue; postpectus and venter black.

Inhabits the United States.

A. *sanguinicollis?* Melsh. Catal.

Body ovate: *head* sanguineous: *eyes* brown: *antennæ* fuscous, pale at base: *thorax* sanguineous; posterior angles very obtusely rounded: *scutel* dark violaceous, rounded at tip: *elytra* blue, polished, with minute, distant punctures: *postpectus* and *venter* deep black: *feet* pale rufous: *posterior thighs* piceous each side and above.

Length one-tenth of an inch.

A beautiful little species.

9. A. *senilis*. Pale yellow; elytra green; suture and exterior edge yellowish.

Inhabits Missouri.

Body pale yellow, punctured: *eyes* fuscous: *antennæ* a little dusky at tip: *thorax*, punctures in-

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distinct; an indented, transverse line near the base: *scutel* subacute at tip: *elytra* green; a common sutural fillet, exterior and terminal edges, and epipleura, yellowish; punctures irregularly disposed: *posterior thighs* but little dilated.

Length less than three-twentieths of an inch.

10. A. *centralis*. Black; thorax with a yellow lateral spot; elytra with a large common rufous spot.

Inhabits Missouri Territory.

Body oval-orbicular, deep black, polished, with short dense hairs: *antennæ* and *palpi* pale yellowish: *thorax*, lateral margins yellow: *elytra* with a large, oblong, common, rufous spot on the middle: *thighs* at tip, *tibia* and *tarsi*, pale rufous.

Length rather more than one-tenth of an inch.

11. A. *uniguttata*. Black; thorax rufous, with a black spot; elytra black; two vittæ and margin yellow.

Inhabits the United States.

Body black, impunctured: *front* rufous: *thorax* rufous; a large, black, central spot, sometimes connected with a smaller one each side, yellowish or pale: *elytra*, with obsolete punctures, black; two equal, yellowish vittæ joining at the tip, of which one is subsutural, and the other originating on the humerus; exterior edge yellowish: *pectus* yellow: *venter*, margin rufous: *feet* rufous: *tarsi* black.

Length more than one-fourth of an inch.

Var. a. Feet black; front black.

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The variety is from near the Rocky Mountains. This species is related to A. *5-vittata*, to *caroliniana*, Fabr. and also to *horticola*, and probably to *glabrata*, Fabr.

TRIPLAX, *Latr.* (Regné Animal.)

1. T. *thoracica.* Pale rufous; elytra black.

Inhabits the United States.

Ips bicolor. Melsh. Catal.

Body pale rufous, punctured; *eyes* and *antennæ*, excepting the basal joints, black: *elytra* with regular series of deeply impressed punctures; interstitial lines with a somewhat regular, undulated series of smaller punctures.

Length one-fifth of an inch.

I change the name given by Mr. Melsheimer, as it is pre-occupied in this genus.

2. T. *sanguinipennis.* Black; elytra and abdomen rufous.

Inhabits the United States.

Tritoma bicolor. Melsh. Catal.

Body black, minutely and rather distantly punctured: *antennæ*, intermediate joints pale rufous: *palpi* whitish: *elytra* pale rufous, with punctured striæ: *abdomen* pale rufous.

Length less than one-fifth of an inch.

The word *bicolor* is pre-occupied in this genus.

3. T. *biguttata.* Black, with a spot at the base of each elytron; beneath yellowish.

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Inhabits the United States.

Tritoma biguttatum. Knoch in Melsh. Catal.

Body punctured, black, yellowish beneath: *head* dull piceous, darker on the disk: *elytra* with punctured, slightly impressed striæ, each with a large, basal, yellowish-rufous spot extending from the scutel to the humeral angle, and hardly attaining the middle of the elytron.

Length less than three-twentieths of an inch.

A common species.

PHALACRUS, *Payk. Latr.*

1. P. *pallipes.* Piceous-black, polished; antennæ, palpi and feet testaceous.

Inhabits Missouri.

Body deep piceous-black, highly polished, immaculate: *antennæ* and *palpi* pale testaceous; terminal joint of the former much largest, abruptly narrowed at tip: *thorax* with minute, obsolete punctures each side; angles acute; an obsolete, indented spot at the posterior angle; base dilated somewhat in the region of the scutel: *elytra* with obsolete, remote series of punctures, rather more distinct near the external margin; two impunctured striæ near the suture on each elytron: *pectus* and *venter* with a few yellow hairs: *feet* pale testaceous, with scattered hairs.

Length not quite one-tenth of an inch.

In considerable numbers on plants near the

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Konza village. The elytra appear perfectly smooth and polished to the eye, and to an ordinary magnifier.

2. P. *penicillatus*. Black, glabrous, oval; thighs ciliate at tip.

Inhabits the United States.

Body oval, entirely deep black, glabrous, impunctured, polished: *antennæ* piceous-black, with sparse, short setæ; terminal joints with cinereous, short pubescence: *thorax* minutely punctured; angles subacute: *elytra*, humeral angle subacute, with obsolete, distant series of punctures, and an impressed stria near the suture: *thighs* ciliate at the inferior tip: *tibia* piceous, black: *venter* with reflected hairs.

Rather larger than the preceding species.

Found near Engineer Cantonment.

It differs from *pallipes* in its differently coloured feet, and ciliate tip of the thighs. In many parts of the United States, this species is found in the seed vessels of such plants of wheat as are destroyed by the parasitic vegetable called *Smut*.

AGATHIDIUM, *Illig. Latr.*

A. *pallidum*. Body yellowish-testaceous; elytra with very minute, transverse lines.

Inhabits Missouri.

Body oval, convex, yellowish-testaceous, glabrous: *head* with a few hairs beneath the edge:

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eyes prominent, hemispherical, black: *palpi* subulate: *antennæ* hirsute, clavate; club oblong, perfoliate; second joint of the club minute: *thorax* impunctured: *scutel* minute: *elytra* rugose in transverse, very minute lines: *thighs* with very minute spines above: *tibia* with prominent, rigid spines.

Length more than three-twentieths of an inch.

A single specimen occurred under wood, at Engineer Cantonment.

COCCINELLA.

1. C. *undulata.* Black; exterior margin of the thorax, and undulated exterior margin and spot of the elytra, yellowish.

Inhabits Missouri.

Body deep black, punctured: *head* slightly hairy before; punctures obsolete: *antennæ* yellowish-testaceous: *thorax* with acute punctures; lateral margin white: *scutel* triangular; tip acute: *elytra*, punctures dilated, slightly indented; a large white spot on the centre of each, and an undulated, white exterior margin; undulations three: *feet* yellowish-testaceous, piceous at base.

Length rather more than one-tenth of an inch.

Var. a. Undulated margin interrupted into three spots.

Var. b. Central spot of each elytron extended backward, and confluent with the tip of the margin.

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2. C. *mali.* Elytra brownish red; each with seven black spots, and a common one on the scutel.

Inhabits North America.

C. *mali.* Melsh. Catal.

Head black; two white spots between the eyes: *thorax* black; two small white spots at the base, and a white lateral margin including a black spot; anterior edge yellow; spots on the elytra placed 1, 3, 3, and a common one at the base: *beneath* black; margin of the abdomen fulvous: *feet* testaceous: *thighs* black.

Length seven-twentieths of an inch.

Var. a. Spots of the elytra surrounded with a whitish areola.

Varietas ocellata. Melsh. Catal.

Var. b. Ground colour of the elytra whitish.

C. *ocellata.* Melsh. Catal.

3. C. *parenthesis.* Elytra pale yellowish, each with a spot; posterior lunule and common spot at base.

Coccinella parenthesis. Melsh. Catal.

„ *5-notata.* Knoch in Melsh. Catal.

Inhabits the United States.

Head black; labrum testaceous; a white, abbreviated, frontal line, and a spot near each eye: *thorax* black; a square spot at base; anterior and lateral margin, and abbreviated, acute line before, white: *elytra* with a humeral, black spot; a common one near the base connected with the scutel;

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a large lunule, occupying the posterior half of the elytron, sometimes interrupted into two distinct spots: *beneath* black.

Length one-fifth of an inch.

4. C. *tibialis.* Elytra pale yellowish-red, with a common spot near the base, and six black spots on each.

Inhabits Missouri.

Head black; frontal spot, and all before the eyes, white: *thorax* black; anterior and lateral margins white, so branched as almost to inclose a black spot on each side: *elytra* pale orange; spots placed 1, 2, 2, 1: *beneath* black: *venter* margined with pale orange: *tibia* and *tarsi* testaceous.

Length more than one fifth of an inch.

5. C. *bioculata.* Elytra red; each with a black spot on the middle.

Inhabits the United States.

Head black; orbits white: *thorax* black; a large marginal spot; anterior margin, and two spots at the base, white: *elytra* reddish; a transverse, oval, black spot on the middle of each, sometimes included in an obsolete, white areola: *beneath* black: *venter* margined with rufous.

Length one-fifth of an inch.

The anterior margin of the thorax is sometimes black like the disk, and the basal spots are wanting.

6. C. *albifrons.* Elytra yellow; suture and two spots on each, black; head and anterior part of the thorax whitish.

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Inhabits Missouri.

Head yellowish: *thorax* black; anterior and lateral margins, and abbreviated line before, white: *elytra*, with the suture, tip, outer edge, and two spots, black; spots placed one near the humerus, and the other behind the middle.

Length less than one-fifth of an inch.

Taken on the Missouri by Mr. T. Nuttall.

7. C. *abdominalis*. White; thorax with seven, elytra each with eight black spots.

Inhabits Arkansa.

Yellowish-white: *head* immaculate: *thorax* with seven black spots placed 2, 5; the anterior ones, placed on the middle, oblong, oblique, slightly undulated, and nearly confluent at tip with the posterior intermediate one: *elytra* 8-spotted; spots small, placed 4 near the base, 3 on the middle, and 1 near the tip: *postpectus* dusky: *venter* testaceous: *feet* pale.

Length one-fifth of an inch.

8. C. *humeralis*. Black; elytra with a humeral spot, and one behind the middle, red.

Inhabits Arkansa.

Body deep black: *head*, a white spot each side between the eyes: *antennæ* and *palpi* pale: *thorax*, an obsolete, whitish, lateral margin and anterior angle: *elytra*, a large, oval, yellowish-red, humeral spot, and an orbicular, red, subsutural one on each, rather behind the middle.

Length more than three-twentieths of an inch.

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Two specimens were obtained near the Rocky Mountains.

9. C. 20-*maculata*. Whitish; thorax with five, elytra each with nine black spots.

Inhabits Missouri.

Coccinella 20-*maculata*. Knoch in Melsh. Cat.

Yellowish-white: *thorax* with four rather large, equal, black dots placed in a semicircular series, and enclosing near the base a smaller, obsolete dot: *elytra*, each with nine spots placed 2, 3, 3, 1, the two central ones confluent: *postpectus* and *venter*, excepting the terminal segment, black.

Length one-tenth of an inch.

ENDOMYCHUS, *Fabr. Latr.*

E. *biguttatus*. Black; elytra sanguineous, with two black spots.

Inhabits the United States.

Head, *thorax*, and *scutel* black, impunctured; two impressed, longitudinal, abbreviated lines, one on each side at the base of the thorax: *elytra* sanguineous, with numerous small, irregular punctures, and two orbicular, black spots, the smaller one placed behind the humerus, and the other, large, placed behind the middle, touching the margin.

Length near one-fifth of an inch.

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PSELAPHUS, *Herbst. Latr.*

1. P. *carinatus.* Reddish-brown; elytra rectilinearly truncated; tergum tricarinate, and with an elevated edge; anterior tibia arcuated.

Inhabits the United States.

Body with short hairs: *head* deeply indented on the front; vertex with two small indentations: *maxillary palpi* with the three last joints dilated; the ultimate one triangular or cordate, being widely emarginate at tip; the inner lobe somewhat mucronate; penultimate joint also large and triangular, with a slender spine or seta as long as the joint placed on the exterior angle; antepenultimate joint rounded, with a spine on the exterior side, similar and equal to that of the other joint: *thorax* rounded, somewhat angulated on the middle of the side, punctured: *elytra* not quite half the length of the abdomen; minutely punctured, with two obtuse, elevated lines on each, obsolete before the tip, and with an impressed groove between them: *tergum* rather darker than the elytra, carinated along the middle, and with an abbreviated, carinate line each side at base; edge elevated: *anterior tibia* somewhat arcuated, gibbous before in the middle.

Length less than one-tenth of an inch.

This species is not uncommon, and is often found under the loose bark of the yellow pine; it

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is referrible to the genus Ctenistes, *Reich.* The elytra are terminated by a straight line like those of the *dresdensis.* It seems probable that the cordate, terminal joint of the maxillary palpi, and the two elongated spines of the preceding joints, may be peculiar to one sex, as a specimen in my collection has but a single spine, and the terminal joint is acute and not dilated.

2. P. *riparius.* Reddish-brown; elytra rectilinearly truncated, half the length of the tergum; tergum simple; anterior tibia rectilinear.

Inhabits Missouri.

Vertex convex, with an impressed line each side: *antennæ*, joints from the third to the eighth, inclusive, subequal; ninth a little larger, but hardly longer; tenth transversely oval, double the size of the preceding one; eleventh still wider, and nearly double the length of the two preceding ones conjunctly: *maxillary palpi* unarmed; terminal joint conic-securiform: *thorax* narrowed behind, not closely applied to the elytra; with a longitudinal, impressed line; sides not angulated in the middle, but indented on the margin: *elytra* half the length of the abdomen; humeral tubercle oblong: *anterior tibia* rectilinear: *tergum* convex, simple.

Length more than one-twentieth of an inch.

A little smaller than the preceding. It probably belongs to the genus Bryaxis of Leach.

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3. P. *dentatus*. Elytra nearly rectilinearly truncated, half the length of the tergum; tergum simple; anterior tibia arcuated.

Inhabits the United States.

Head blackish; a small indentation above each antenna: *antennæ* rufous; joints, from the third to the eighth, inclusive, subequal; ninth a little larger, but hardly longer; tenth transverse, double the size of the preceding one; eleventh oval, wider than the tenth, and as long as the 8th, 9th and 10th conjunctly: *thorax* nearly orbicular, slightly prominent on the sides, blackish; an oval indentation at base, and an orbicular one each side: *elytra* reddish-brown, nearly half the length of the abdomen; humeral tubercle oblong; an impressed line on each elytron obsolete behind: *tergum* convex, simple, blackish: *anterior tibia* a little arcuated.

Length one-twentieth of an inch.

Var. a. Reddish-brown.

Smaller than either of the preceding species.

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Description of several Species of the Linnæan Genus RAIA, *of North America.* *By* C. A. LESUEUR.

(READ AUGUST 17, 1824.)

CHONDROPTERIGIOUS.

ORDER I.

With fixed Branchia. Cuvier.

RAIA, *Linn. Cuv.*

The rays properly so called, have the disk of a rhomboidal form; tail slender, furnished above towards the tip with two, and sometimes three dorsal fins; teeth slender, and placed in quincunx on the jaws. (Cuvier.)

† Dorsal fins two.

1. R. *Desmarestia*, male and female.
2. R. *eglantiera*, do. do.

†† Dorsal fins three.

3. R. *Chantenay*, male and female.

1. R. *Desmarestia*, Pl. IV. Many ranges of long curved points exterior to the eyes, and upon the pectoral fins; a range of spines upon the dorsal line; three ranges on the tail, and a spine at each extremity of the dorsal disk; two approximate

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fins on the superior extremity of the tail; snout elongated and obtuse; teeth discoidal, surmounted by a point.

The *body* of the specimen, which is a male, is compressed; subrhomboidal: *snout* prominent, rounded at tip, slightly emarginated each side; the cartilage which sustains it is narrow, with small points: *head* narrow, covered with spines between the eyes, which are prominent, and of moderate size: *spiracle* small, placed but a short distance behind the eyes; three spines in an oblique line behind the spiracles: *back* with a range of very strong spines, terminating at the emargination which separates the pectorals from the ventrals, leaving a large space before the three spinous series of the tail, in which are small cicatrices which denote the situation of spines that had probably fallen off, or been accidentally extracted; besides the three ranges of strong spines with which the tail is armed, there is one on each side, another above; there are also small asperities between the ranges, as well as between the spines of the ranges; other spines are irregularly placed before the eyes, on the sides, and near the spiracles; those of the back, tail, and spiracles, are discoidal at base, with the point curved towards the tail; there are also large spaces armed with long spines, particularly on the pectoral fin, and exterior to the eyes, where they are more distinctly placed in quincunx; those of the fins are

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longer, and bent so that the greater portion seems to rest upon the skin, with the point directed towards the middle of the back; they are strongest opposite to the angle of the fin, and diminish sensibly towards the superior margin, so as to be obvious only to the touch; those exterior to the eyes, and those remote from the margin, are somewhat compressed and shorter than the preceding, consisting of four or five distinct and separate ranges, separated from those of the fin; they are also bent, with a long point directed towards the tail; the remainder of the body is glabrous.

The specimen is dried, and although well preserved, cannot be expected to exhibit the just proportions of nature. Breadth twelve and a half inches; from the tip of the rostrum to the origin of the tail nine inches nine lines; length of the tail nine inches five lines; appendice eight inches three lines.

Colour brownish above and whitish beneath. It inhabits the sandy coasts of Florida, from whence it was brought by Messrs. Maclure, Ord, Say, and T. Peale.

The FEMALE differs from the male in being destitute of spines on the lateral fins, and near the eyes; the body, instead of being glabrous as in the male, is armed with numerous small spinous asperities, scattered over almost all the surface, not excepting the cartilage of the nose; the sides, however, to the edge, are glabrous and transpa-

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rent; the tail, like that of the male, is armed with three spinous ranges, with intervening smaller ones; two small low fins, elongated like those of the male, are placed near the extremity of the tail, and distant from each other in order to give place to the insertion of two spines; the tail extends a little beyond the second fin in both sexes.

Pl. IV. fig. 1. Dorsal view. 2. Ventral do. imperfect. a. Spines exterior to the eyes. b. spines of the pectoral fins.

2. R. *eglantiera*, Bosc. A longitudinal series of from nine to twelve simple spines on each side upon the lateral fin; tail longer than the body, with two fins at its tip.

Description. *Body* flat, semiorbicular behind, with a wide, rounded emargination each side before near the spiracles, anterior to which the edge is dilated opposite to the eyes, and then is contracted so as to form a short rounded rostrum; on the margin each side beneath from the rostrum to near the eyes, are very small points arranged like the teeth of a card; the remainder of the inferior surface is glabrous; above, on the rostrum, and on the margins opposite to the eyes, are strong, compressed, recurved spines; before and behind the eyes and orbits, spinous: *back*, with a transverse spinous disk; the line of the middle of the back unarmed, but on each side of this line are very obvious spines which extend to

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the end of the tail, and commence at the middle of the transverse dorsal disk; they at first form a single series, but as they proceed backwards they increase to three series, and towards the part of the tail comprised between the two long lateral appendices, they are more prominent and consist of three or four irregular series, with intervening smaller spines; beyond the appendices they again form a single series: *tail* strong, broad, longer than the body, with two equal, similar fins near the extremity, each sustained by a broad falciform ray, which has numerous ramifications; these fins are each united to the tail at their inferior surface by a membrane, they are narrow and elongated, the extremity of the first nearly attaining the base of the second, which does not quite reach the tip of the tail: *eye* somewhat prominent: *cheeks* a little dilated before the eye, yellow and transparent between the cartilage of the rostrum and the margin: *spiracles* large behind and very near the eyes: *mouth* small, transverse: *inferior jaw* projecting a little in the middle, and received into an emargination of the superior jaw: *teeth* inclining upon each other, at base a little depressed, dilated, towards the tip rounded and prolonged forward in a small point which is also depressed: *nostrils* with two enlarged, rounded appendices at the extremity: *lateral fins* thin, rounded: *ventrals* long, narrow, with a round anterior lobe, elongated behind and attached to the appendice, which is much

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elongated, equalling half the length of the tail: *tail* with a small membrane each side of its whole length.

Width ten inches. Length from the tip of the rostrum to the origin of the tail nine inches. Tail ten inches.

Colour, above reddish, sprinkled with small spots; beneath, whitish, with reddish tints.

I have met with this species in the Philadelphia market, where, however, it is very rare. The specimen is a male. It is common in the bay of Charleston, where Mr. Bosc observed it; his description is inserted in Lacepede's Histoire des Poissons, vol. 2. p. 105. pl. 4. f. 1.

The specimen which Mr. Bosc described was a female; and as he says nothing of the male, it is probable that he had not seen that sex.

The form of the male that I observed, was altogether the same as that of the female which Mr. Bosc described, although it was from a different locality; and I have no doubt of its being the same species; but at the same time I may observe, that Mr. Bosc's drawing is ambiguous as respects the position and form of the fins placed near the extremity of the tail; and as this author draws a part of his description from these fins, it is to be wished that he had been more exact with respect to these important appendages. If his description is perfectly accurate, the individual that came

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under my observation is a new species; but before this can be determined, more detailed descriptions must be drawn out from recent specimens, a task which it is desirable that some naturalist at Charleston would perform.

3. R. *Chantenay*. FEMALE. Pl. V. fig. 3 & 4. Three fins at the extremity of the tail; body beneath with small irregular spots.

DESCRIPTION. *Body* flat, subrhomboidal, about one-fifth broader than long: *head* but little elevated: *rostrum* projecting, acute, of a moderate size, rough at tip and furnished with very small points: *mouth* transverse, rectilinear, armed with small, flat, pentagonal teeth, a little separated in each jaw: *nostrils* small, and the canal, which communicates with the mouth, is covered by a large, rounded appendice, fringed on the margin: *branchial apertures* five on each side, subequal, subequidistant, and placed upon an oblique line: *eyes* small, not prominent; *iris* yellow: *spiracles* large, very near to and behind the eyes: *pectoral fins* large, triangular, terminating obtusely on the sides, narrow and rounded behind; *ventrals* emarginate, wide before, narrow behind: *anus* posterior to the origin of the ventrals: *tail* very robust, margined with a slight membrane each side, subdepressed, destitute of a serrated spine, armed laterally with points, and terminated by three rounded fins, of which the third is very small and near the tip of the tail, the others are subequal and larger: *body*

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above glabrous, excepting on the anterior margin of the pectoral fins, between the eyes, and on the extremity of the rostrum, which are rough to the touch; scattered reddish-brown spots of various sizes and forms, and a transversely-oblong subocellated spot each side of the middle: *beneath* whitish, lightly tinted with rosaceous; surface smooth and soft to the touch; towards the anterior part of each side of the anus are six small black lines or spots; rays of the ventral fins very distinct beneath.

Length from the end of the rostrum to the base of the tail two feet, breadth two and a half feet; tail as long as the space intervening between the eyes and its base.

Male, Pl. V. fig. 1 & 2. Four series of points near the angle of each pectoral fin, and smaller ones on each side opposite to the eyes.

Body subrhomboidal like that of the female: *rostrum* acute, furnished above with points which extend nearly to the extremity of the fin; they are long, strong, inflected towards the middle of the back, placed in quincunx, and consisting of four approximate ranges: *orbits* with small points before and behind, rendering these parts rough to the touch, but not so distinct as those opposite to the eyes: *tail* depressed, wide at base, terminating in a point, and armed on each side with a range of spines and with a membrane beneath the spines; towards the tip are three semioval fins, of

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which the third is smallest, and the first and second subequal: *mouth* and *eyes* nearly like those of the female: *teeth* discoidal at base, surmounted with a short point directed towards the throat, less abraded than those of the female, in which they are more flattened and pentagonal: *ventral fins* widely emarginated, narrow, and each terminated by an appendice, which characterizes the sex: *colour* reddish above: *skin* smooth, excepting on the parts above indicated as armed with asperities: *beneath* whitish, sprinkled as above with small blackish spots.

The dimensions agree with those of the female.

In the months of July and August the pectoral fins only are sometimes brought to market.

The above description is made from a dried specimen preserved in the Philadelphia Museum, and I am indebted to Mr. Titian Peale for the opportunity of examining it.

This species seems to me to have some affinity to that described by Dr. S. L. Mitchill of New York, under the name of R. *ocellata*; but the latter is said to have only two fins on the tail, a character that sufficiently distinguishes it from the present species, which has three, as in the R. *clavata*, R. *rubus*, and R. *batis*, (Lacep. vol. v. p. 693. pl. 20. fig. 1.)

I dedicate this species to the amiable author of the "Calandrier de Flore," and of the "Genies des Peuples."

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Pl. V. fig. 1, male ventral view. Fig. 2, male, dorsal view. Fig. 3, female, dorsal view. Fig. 4, female, ventral view. Fig. 5, fringed appendice of the nostrils. Fig. 6, spine of the pectoral fins. Fig. 7, mouth. Fig. 8, teeth.

TRYGON, *Adans.*

Tail armed with a dentated spine; teeth slender, dense, placed in quincunx; head enveloped by the pectorals as in the common Rays, so as to form in general a very obtuse disk.

Tail slender, destitute of fins.

T. *sabina.* Tail more than twice as long as the body; ventral fins long, pointed; appendice in the male slender, distinct, as long as the ventrals; a range of spines upon the back and the origin of the tail; *on each side of the back are two spines;* upper part of the head rough.

Description. Body orbicular, a little longer than wide, terminated before by a short rostrum, forming nearly a right angle; nasal cartilage narrow, without a groove or spines; upper part of the head furnished with small spines, which render this part rough to the touch; the remainder of the upper surface of the body glabrous: *pectoral fins* subrectilinear before, rounded behind and at their lateral angles; the rays of these fins are obvious even on the sides of the nasal cartilage: *eyes* small, not very distinct: *spiracles* placed behind the *opening of the mouth*, small, but slightly ar-

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cuated, armed with small, obtuse, rhomboidal teeth: *colour* of the dried preparation, above reddish.

The specimen is a male; the inferior surface of the body, the branchial openings and nostrils, are destroyed. It was communicated to me by Mr. T. Peale, who accompanied Messrs. Maclure, Ord, and Say, on their expedition to Florida.

By the form of its body and tail, this species is very closely allied to that of the coast of France and of the Mediterranean; but by a comparison with a drawing of the latter, that I made at Nice and at Havre, I have found it to be different, and have been enabled to assign to it the distinctive characters above mentioned, which when they shall have been confirmed by new observations, will enable us to fix the species with more precision than I have been able to do from a dried specimen. It is much to be desired that those who have an opportunity of examining a recent specimen, will avail themselves of it. The following comparative characters of the known species, may be useful to this inquiry.

R. *pastinaca*, Bloch. pt. 3, pl. 82. female, and Encycl. Meth. pl. III. fig. 8, male, from the coast of France. *Tail* less than twice the length of the body: *ventrals* of moderate size; appendice of the male very short, and far from attaining the extremity of the ventrals; no spines on the back or tail. Of that of Nice the ventral fins are more

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truncated, straighter, and the appendices of the male are longer by one half than the ventral fins, a character which distinguishes it from the two first.

All the species described and figured by authors that I can refer to, are females. In the Nouveau Dictionaire d'Histoire Naturelle, where I expected to find a good figure, I was surprised to see the large spine of the tail represented as taking its rise from the under surface of this part.

MYLIOBATIS, *Dumeril.*

Head prominent beyond the pectoral fins, which are wider transversely than in the other Rays, giving to the whole animal the appearance of a bird of prey with its wings extended, and hence it has been compared to an eagle; jaws armed with wide, flat teeth, connected together like stones in a pavement, and of different proportions according to the species; tail very slender and elongated, terminating in a point, and like that of the Trygon, armed above with a strong spine, which is serrated on each side, and with a small dorsal fin towards the base. (Cuvier, Regne Animal.)

M. freminvillii. Orbit salient, surmounted by an eminence; ventrals rounded; appendices longer than the fins.

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Body wider than long, rhomboidal: *pectorals* pointed at tip: *back* a little arcuated: *head* elevated: *eyes* large, vertical, orbits long, subangular at their summit: *spiracles* large, situated behind the eyes: *rostrum* salient, rounded, broad, flat, distinct from the body by a rounded emargination behind the eyes on each side: *mouth* beneath the eyes small, but little arcuated, with the jaws paved with very broad teeth, in the middle of many ranges of narrow ones, on each side; all these teeth are flat on the surface: *nostrils* small, and with a small appendice; they are situated between the end of the rostrum and the angles of the mouth: *pectoral fins* formed like an isoceles triangle, its base being the line which passes before the eyes and terminates at the posterior angles of the fins; the three sides are rectilinear: *ventrals* small, rounded, each furnished with a short, dactiliform, distinct appendice, which is longer than the fin: *anus* small, placed in a line with the origin of the ventrals: *tail* very long, filiform, triangular, with a small rounded fin, followed by two flattened, denticulated points on each side, which, as well as the fin, are placed a little beyond the extremity of the ventrals: *branchial openings* male, approximated, five on each side, so situated as to form together a half oval: *colour*, above olivaceous, more or less deep in different specimens, paler on the margins, and sprinkled with distinct rounded spots; beneath white: *skin* glabrous; I

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did not observe any spine on the tail, or points on the pectorals.

Length two feet, breadth from two to three feet.

This species is very common in small inlets in Howland's Bay, Rhode Island, where I had an opportunity of examining many fresh specimens recently rejected by the fishermen, and cast upon the shore in the midst of others, in various states of decomposition.

The *freminvillii* may be compared with the *aquila* of Bloch, part 3, tab. 81, of which the form of the body is orbicular. Risso and Cuvier very properly cite this figure with doubt; the latter author refers it to TRYGON, considering it as a species of that genus, to which, says he, a dorsal fin has been added. Our species is allied to that of the Mediterranean, described by Risso in his Ichthyology of Nice, p. 9, but the description he has given is not sufficiently detailed; he says nothing of the form of the body or of the fins, but refers to the figure of Rondelet, p. 268, lib. 12, cap. 2. Rondelet's figure was, to all appearance, made from the dried subject, yet I have no difficulty in recognising the truncated form of the ventral fins; the body appears to me much larger, and the fins more angulated. The same characters are equally observable in Salviani's figure, which is repeated by Willughby, T. c. 2, and again copied in the Encyclopedie Methodique, pl. 4, fig. 10; but they are still more obvious in a drawing which

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I myself made in the year 1809, during our sojourn at Nice, where my friend Risso assured us that it was the same species described in his Ichthyology. In my drawing, the appendice of the male is not extended beyond the ventrals; while in the American species, it extends beyond it almost its whole length. This character, together with that of the rounded ventrals, appears to me sufficient to justify us in separating the present species from that of the Mediterranean.

Another species, also closely allied to the present, is the *Raie aigle* of Commerson, discovered near the Isles of France and Madagascar, and figured by Lacepede, vol. 1, p. 6, fig. 2. The form of the body, its colour, and the spots of the back, would lead me to believe it to be absolutely of the same species, but that the spine and fin are placed between the extremities of the ventrals, whilst in our species they are situated beyond the extremities. The RAIA *narinari* of Willughby, which inhabits the coast of Brazil, seems to me to be the same as that of Lacepede, figured from a drawing by Commerson, who probably found his specimen in the Brazilian sea. After an examination of the figures and descriptions given by various authors, with a view to ascertain the affinity of the *freminvillii*, I have been led to the same conclusion that Cuvier adopted after a similar investigation, that all those cited as the same species, are in reality

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specifically distinct. Cuvier enumerates the following:

La Raie aigle, Dumer. } Duham. p. II, sec. 9.
Raia *aquila*, Linn. } pl. 10.
R. *narinari*. Linn. Margrave, 75.
R. *flagellum*, Schn. 73.
R. *nieuhowii*, Will. App. tab. 10, fig. 3.

To these I add the following:

R. *quadriloba*, nob. Journal Acad. Nat. Sc.
R. *freminvillii*, nob. " " "

CEPHALOPTERA, *Dumer.*

These have the slender tail, the serrated spine, the small dorsal, and the very wide pectorals of the Myliobatis; but their teeth are still more slender than those of Trygon, and finely denticulated; their head is truncated before, and the pectorals, instead of embracing it, have each of their anterior extremities prolonged in a salient point, which gives the fish the appearance of having two horns. (Cuvier Regne Animal.)

C. *giorna*. Jaws terminal, the inferior one a little more advanced; two large, flabelliform, moveable appendices, one on each side of the mouth; eyes prominent, lateral; tail longer than the body, armed with one or two spines, very distinct from the dorsal fin, which is situated between the ventrals.

Body fifteen or sixteen feet wide between the

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extremities of the pectoral fins, by seven feet nine or ten inches long: *tail* four or five inches longer than the body: *mouth* very large, horizontal and terminal, two feet six inches wide; jaws unequal, the inferior a little more prominent, with very small asperities, which supply the place of teeth, they are distant and consist of many ranges; on the superior jaw the asperities are hardly perceptible: *nostrils* small, situated beneath the anterior angle of the appendices and near to the angles of the mouth, each covered by a small rounded lobe; no apparent tongue: *eyes* semiglobular, prominent, situated on a conical base at the origin of the appendices, so as to be lateral, and at the same time nearly on the anterior part of the head; they are two inches in diameter, and the pupil nine lines: the *appendices* are one foot wide by two feet two and a half inches long from the eye to the extremity, they are thick before and thinner and more flexible on the inner side; these organs appear to serve as large palpi; the radiated appearance of their surface, indicates that they are sustained by numerous, interior, cartilaginous rays, similar to those of the pectoral fins; *ears*, behind the eyes, near to the widest superior margin: *branchial openings* five on each side, large, linear, and sustained by a cartilage through more than half their length; they are placed very near each other, the interval between the right and left series is eighteen inches, the fifth open-

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ing is the smallest: *pectoral fins* equal in length and width, arcuated before, lunate behind, a little dilated and rounded at the extremity near the ventrals: *ventrals* small, narrow, rounded, not longer than the pectorals and united with them: *dorsal* small, triangular, and placed on the base of the tail between the ventrals, than which they are shorter: *anus* small, longitudinal, between the origin of the ventrals: *tail* subcompressed, feeble and soft, without asperities, or spinous tubercles; armed above beyond the dorsal fin with a short serrated spine, near which is an indentation, probably the seat of a former spine which has disappeared: *skin* destitute of tubercles or spines, but rude to the touch, and rough like that of some species of SQUALUS: *colour*, above blackish a little tinged with reddish, somewhat clouded; the branchial rays were marked and distinct by a darker tint which followed the direction of the interior cartilages in arcuated lines: *beneath* white, dusky on the posterior margin with many darker spots, irregular in form and disposition, the largest of which are on the abdomen, and the smaller on the margin and middle of the fins.

A female fœtus of the preceding has the same form, the same appendices to the head; the lanceolate spine of the tail, preceded by a slight depression for the replacing spine; the dorsal fin likewise triangular and similarly situated; the appendices are horizontally before the opening of

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the mouth, and cover this part by their extremities and interior margin, which being flexible had the power of raising itself; the body is one foot eleven inches wide by ten and a half inches long; the opening of the mouth four inches; inferior a little more prominent than the superior jaw, and furnished with very small teeth in seven or eight ranges, they are placed somewhat distant from each other and in quincunx; those of the superior jaw are so minute as to be only distinguished by the aid of the lens; head truncated, and terminated by the jaw in a straight line; eyes placed on the anterior sides, and giving an angulated appearance to the part; the tail, which is very soft, seems to be furnished beneath with a small longitudinal fin opposite to the spine; but this may, perhaps, be only loose skin, as I did not observe it on the adult; colour reddish above; skin smooth; tail four or five inches longer than the body. (In the Philadelphia Museum.)

Towards the end of August 1822, the above described specimen was brought to the Philadelphia Museum. This gigantic Ray was taken near the entrance of the Delaware by some fishermen who were armed with harpoons and other instruments necessary for the purpose. They were directed to the presence of several of these animals by the agitation of the waters about them, and the noise they made by striking the waves with their large fins.

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This large species is known by the name of Devil-fish; a name applied by Catesby to a nearly similar animal, which, becoming entangled in the cable of a small vessel lying in the bay of Charleston, drew it a distance of several miles.

The imagination, always struck peculiarly by extraordinary objects, is ever ready to transform them to monsters; hence the names *Devil-fish*, *Wonderful Sea-Serpent*, &c. and another large specimen of Ray which was captured at the same time and place, was transported to New York, where it was exhibited under the name of the *Vampire of the Ocean!* An account of this specimen was read to the Lyceum of that city by their late president, and published in the Annals of that institution, with a figure.

Recently, while about to publish a figure of the specimen belonging to the Philadelphia Museum, I observed a very exact description of an individual, taken at Wilmington Island, near Savannah, published in the Philadelphia Gazette of the 6th of August last. It was evidently of the same species with the present.

I have no doubt that the Ray mentioned by Catesby, (vol. i. p. 32,) under the name of Devil-fish, was of the same species with all those large ones more recently seen on our coast; and I am moreover inclined to think that they are no other than the Raia *giorna*, Lacep. v. 20. 3, to which Cuvier refers the R. *fabroniana*, Lacep. vii. pl. 5,

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f. 3; the R. *manatia*, Will. App. ix. 3. &c. the figures of which are very imperfect, and the descriptions not precise.

If we take into consideration the position of the Azore Islands, which are situated between the Strait of Gibraltar and the North American coast, it will be obvious that this large species, known by the name of R. *cornuta*, has an easy means of communication between the two continents, by these islands, when they pass out of the straits into the ocean. If their place of residence is the vicinity of those islands, we can the more readily believe that they would be occasional visitants of this coast.

It is worthy of remark, that they have been observed to approach our sandy coasts between the months of July and September, when the time has arrived for bringing forth their young; and it is probably for this purpose that they made their appearance here.

I have adopted for this species the name of the celebrated Giorna, well known in science, and reject such names as Devil, Vampire, &c. which may well be associated together, as names calculated to repel those who are disposed to admire the beauties of nature, and who have an inclination to cultivate scientific natural history. How far preferable is the custom of applying the names of those naturalists, who have enriched science with new discoveries, or new and valuable

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observations, to that which introduces into our pages those chimeras that do not elsewhere exist, than in a morbid or timorous imagination.

The descriptions and notes which have been given of the large species of Ray, are so imperfect, and the figures so incomplete, that before we can be justified in deciding upon any as new, we must have more detailed descriptions and exact figures, made, if possible, from the living or recent specimens. The annexed figure and these accompanying observations are, I am fully aware, far from being complete; but they may be a useful addition to those already published, and serve to make known and to fix the species seen on the coast of North America.

Pl. VI. fig. 1. Ventral view, with the appendages reflected. Fig. 2. Fœtus ventral view, the appendages in the natural position. Fig. 3. Fœtus dorsal view, the appendages partly extended. Fig. 4. Fœtus, lower part of the back, and tail.

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Description of a new crystalline form of the Andalusite. *By* G. Troost, M.D. *Read June* 29, 1824.

Through the politeness of my friend Major Delafield, of New York, I have an opportunity of describing a new variety of the crystalline form of Andalusite, the character of which does not appear to be sufficiently understood.

It appears from a letter of Major Delafield to Professor Silliman, published in the American Journal of Science and Arts, that the Major discovered this mineral in Litchfield, Connecticut, associated with quartz; it seems, however, that the specimen was not found in situ, as the discoverer could not decide whether it came from granite or not.

The crystal alluded to, is apparently a right angled four sided prism, two of the angles of the base being truncated and bevelled. But as in this case we take two of the faces that belong to the sides for those of the summits, and two of the summits to form the sides, it is evident that an erroneous idea of the form is conveyed.

When the crystal is placed in the proper position, so that the perpendicular line drawn through the upper and lower extremities is vertical, we then see that it is a six sided prism, having four emarginated edges terminated by a dihedral summit.

To render this more intelligible, I add a diagram of the crystal in its true position, Pl. ii. fig. 6.

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There is an apparent deviation in the symmetry of the specimen under examination from the form here represented. The face P, one of the pentagons of which the upper summit is composed, touches the pentagon which runs parallel to *y*, by which accident the faces *y y*, are very much enlarged. These faces form a right angle with two of the faces M of the prism, and are generally mistaken for faces of the prism, and of course the whole is considered a four sided prism; at the same time the face P of the pyramids forms with the remaining face of the prism *l* and *z* on one side, and T and *z* on the other; what is mistaken for a summit, making a plane, two of the angles of which are truncated and bevelled, the supposed truncation being the face *l*, and the bevelment *z* on one, and the face T, the truncation, and *z* the bevelment on the other side.

This form of the Andalusite coincides with a form of the Feldspar *progressive*, and is the fourth form by which this mineral is approximated to the Feldspar, Haüy having described three.

Pl. II. Figs. 5 & 6.

ANDALUSITE *progressive* G^2 G^4 M^2 H T P $\breve{1}$
l z M *z'* T P *y*.

From *l* upon P	60°
y	P 99° 41′ 8″
M	T 120°
M	P 90°
z and *z'*	*l* and T 150°

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An account of some of the Fossil Shells *of Maryland. By* Thomas Say. *Read July* 20, 1824.

The following descriptions were made out from specimens in a very large and fine collection of fossil shells which Mr. John Finch obtained with much labour and some expense in Maryland, and which that gentleman with great liberality submitted to my examination. Many of these shells appear to the eye nearly as perfect, in every respect, with the exception of colour, as the recent ones of the coast, and not a few of the bivalves have both valves attached together by the teeth of the hinge; circumstances which indicate an undisturbed deposition from the waters in which they had lived. Respecting the limits which circumscribe this body of shells, the relative situation in which the species are found, &c. we may expect much interesting information from Mr. Finch. I may, however, observe at present, that it seems probable that the formation extends much farther south than might at first be supposed, or that nearly a contemporary one exists in South Carolina. For a knowledge of this fact, I am indebted to Mr. Stephen Elliott, who sent me several shells from near the Santee river, one of which corresponds perfectly with a species in the collection of Mr. Finch.

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TURRITELLA.

T. *plebeia.* Pl. vii. fig. 1. Whorls convex, hardly flattened in the middle, with about twelve revolving elevated striæ, the middle ones alternately somewhat smaller; transverse wrinkles distinct.

This shell seems to attain to the length of rather more than one inch. Several specimens are imbedded in a small mass of light lead coloured clay. It somewhat resembles T. *brevis* of Sowerby, but the striæ are not crenulated. A species of TURRITELLA was found by Mr. A. Jessup in New Jersey, quite different from the present species, and resembling the T. *conoida*, Sowerby, but much smaller.

NATICA.

N. *interna.* Pl. vii. fig. 2. Subglobose, depressed, subglabrous; umbilicus open, with a revolving rib.

DESCRIPTION. *Shell* destitute of revolving striæ, and the wrinkles are not prominent, except near the suture, towards the labrum, and on the verge of the umbilicus: *spire* but little prominent, acute: *aperture* subovate: *umbilicus* open, permitting a view nearly to the inner tip of the spire; a revolving rib above the middle of each volution, terminating at the labrum in a hardly prominent callus.

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Length seventeen-twentieths, breadth nine-tenths of an inch.

Several specimens are in Mr. Finch's collection in tolerable preservation, but very fragile, though not thin. I obtained a species of NATICA at Mullica Hill, New Jersey, a few years since; but it is so changed by casualties, and by the infiltration of ferruginous matter, that its specific alliance with the present species cannot be appreciated.

OLIVA.

Several specimens occur about the length of one inch and two-fifths, but too imperfect to admit of any decision as to the species.

BUCCINUM.

1. B. *porcinum*. Pl. vii. fig. 3. Subovate, acute, slightly undulated, and spirally striated; labrum toothed.

DESCRIPTION. *Shell* with numerous, subequal, slight undulations, disappearing on the body whorl, and about seventeen transverse, little elevated striæ: *whorls* nearly six, but little convex: *suture* very narrow, consisting of a mere indented line: *apex* acute: *aperture* moderate, rather more than half the length of the shell: *labium* covering the columella, concave: *labrum* not thickened; on the inner submargin with striæform teeth.

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Length one inch and a quarter, breadth rather more than three-fourths of an inch.

This is shorter than the *reticosum* of Sowerby, the suture is not so deeply impressed, the undulations are not so obvious, and the concavity of the labium is much more profound.

2. B. *aratum*. Pl. vii. fig. 4. Oblong subovate, spirally striated; labrum thickened and toothed within.

Description. *Shell* with more than twenty revolving, slightly elevated lines: *whorls* but little convex: *suture* very narrow, consisting of a mere indented line: *aperture* moderate: *labium* covering the columella, which is concave: *labrum* thickened on the exterior, and with striæform teeth on the interior submargin.

Breadth half an inch, length of the aperture rather less.

Smaller and of a much more slender form than the preceding, and altogether destitute of undulations. The summit of the spire being deficient in the specimen, its length cannot be ascertained.

FUSUS.

F. 4-*costatus*. Pl. vii. fig. 5. Ovate-ventricose; with a dilated umbilicus, and four much elevated belts, which are more dilated at their tops.

Description. *Spire* short, the volutions with but two belts, the others being concealed by the suc-

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ceeding whorls: *body whorl* with four belts, which are equidistant, much elevated, wider at top than at the junction with the whorl, and with one or two deeply impressed lines; intervening spaces wrinkled, the wrinkles extending over the belts: *aperture* suboval: *canal* short and contracted: *labrum* with a groove corresponding with each of the exterior ribs: *umbilicus* dilated, large, not visibly penetrating to the inner summit; the exterior margin prominent and deeply dentated.

Varies much in size; the smallest in Mr. Finch's collection is about three-fifths of an inch wide, another is rather more than one inch in width, and the largest is nearly three inches and three-fourths; but a fragment of a still larger one leads me to believe that the species attained to a width of more than four inches. I am unable to state the proportional length, all the specimens having truncated spires. The belts of some young specimens are altogether destitute of the impressed lines.

It seems hardly possible that Lister's figure 2, of plate 1059, was intended for this shell, although it has certainly a general similarity in the ribbed appearance of the figure, and notwithstanding the locality "*a Marylandia*," which is engraved with it, inasmuch as there is not any appearance whatever of an umbilicus, which is so much dilated and so remarkable in the species under consideration.

Lister's figure is quoted by several authors

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amongst the synonymes of Buccinum *scala*, and considered as a variety of that shell, which may perhaps be correct; but in that case the fact of such a shell having been found in Maryland, is at least doubtful. Our shell may be the same with the species which Dillwyn informs us is mentioned in the Portland Catalogue, lot 3516.

A fine specimen of this shell was sent me some time since by Mr. Stephen Elliott of Charleston, who informed me that it was found with other interesting and perfect shells which accompanied it, on the Santee river, a little below the junction of the Congaree and Wateree rivers.

Fusus *cinereus* nobis. A variety of this shell is in Mr. Finch's collection; it differs but little from the recent shells, the spire and beak are slightly longer.

FULGUR.

1. F. *canaliculatus*, Linn.

Lister Conch. pl. 878, f. 2.

Ellis' Coral. pl. 33, f. b. As this latter figure has the channel of the spire, and is accompanied by the ovaries of the *canaliculatus*, it is, no doubt, the young of this shell, reversed by an error of the engraver as Dillwyn has already supposed.

Variety. Sutural channel dilated, columella much arcuated.

With the exception of the variation above men-

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tioned, the specimen agrees very well with the species to which I have referred it. The granulations which crown the spire of the young shell are very evident in this specimen. These elevations characterize the MUREX *granum*, Schrœter, which Linné considered to be the young of this species.

2. F. *carica*, Gmel.

Lister, Conch. pl. 880.

F. *eliceans*, Montf. p. 152. Knorr delic. pl. 30. f. 1.

There can be no doubt of the identity of a specimen collected by Mr. Finch, with this species.

The *carica* varies considerably in the magnitude and number of the elevations which constitute the armature of the shoulder. In the young shell they are more numerous than in the adult, and the beak is proportionally longer and more slender. A variety in this fossil collection has the elevations of the shoulder hardly prominent.

CALYPTRÆA.

1. C. *grandis*. Pl. vii. fig. 6. a. Internal view., b. Lateral view. Ovate; internal appendage dilated, and attached to the side of the shell.

DESCRIPTION. *Shell* large, ovate at base, inequilateral, concentrically wrinkled, destitute of spines or processes: *apex* behind the middle nearly erect: *internal appendage* transverse, patulous, occupying a considerable portion of the cavity of the shell,

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and attached by one side, from its summit to its edge, to the shorter side of the shell; its summit corresponding to the inner apex of the shell.

This very remarkable shell is perfectly distinct as a species from any other yet known. That it does not, in rigid accuracy, belong to the genus CALYPTRÆA, must be evident to every conchologist who considers the characters laid down in the above description, and who is, at the same time, aware, that the internal appendage of the type of the genus, is open on one side throughout the whole of its length. If it be not properly a CALYPTRÆA, it cannot be referred to the closely related genera INFUNDIBULUM, Montf. and MITRULA of Gray, much less to any other genus with which we are acquainted. I therefore propose that it be placed in a new genus under the following name and characters.

DISPOTÆA.

Shell univalve, conoidal, patelliform, with an internal entire cup-shaped appendage, adhering by its side and apex to the side of the shell.

To this genus will also be referred a recent species brought by Lieut. Gantt, U. S. N. from South America, and presented by him to the Academy. Of this shell I cannot find any description, and will therefore characterize it as follows:

D. *tubifera*. *Shell* oval, inequilateral, with small

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radiating striæ, and numerous tubular processes: *apex* inclined towards the shorter side; within livid-brown, polished: *cup-shaped appendage* brown near the apex, margin pure white, and distinct from the side as far as the submargin.

Calyptræa *costata*, nobis, Silliman's Journal, vol. 2, p. 40, belongs to this genus. In Mr. Finch's collection are fine specimens of this species.

FISSURELLA.

F. *redimicula*. Pl. viii. fig. 1. Ovate-oval a little oblong, conic-convex, with approximate longitudinal striæ; foramen ovate-oval, inclined.

Description. Longitudinal striæ slender, numerous, granulated, approximate; the granulations of the striæ give the appearance of concentric obsolete lines: *aperture*, inner margin crenate; thickened inner margin of the foramen truncate at one end.

Longest diameter one inch and a half.

I am not acquainted with the F. *peruviana*, Lam. and the description of that shell will not enable me to judge satisfactorily of its degree of affinity with the present species.

OSTREA.

1. O. *compressirostra*. Pl. viii. fig. 2. a. Internal view. b. External view. *Shell* sinistral,

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subovate: *inferior valve* convex, with numerous convex ribs interrupted by fornicated scales at the lines of increment: *hinge* curving a little upward, very much contracted and short: *superior valve* flat, wrinkled concentrically, without any appearance of longitudinal lines: *hinge* more dilated than that of the superior valve, and oblique with respect to the thickness of the shell.

Length of the specimen four inches and four-fifths; breadth four inches and a quarter. A large superior valve is five inches and three quarters long, and five inches and a quarter broad.

Like many species of this genus, it varies much in form, and in the prominence of the ribs on its convex valve; but these ribs are very obvious on the nine specimens under examination. Externally some varieties have a striking resemblance to O. *bellovacina*, Lam. but the hinge is much more contracted.

Besides those obtained by Mr. Finch, Mr. Z. Collins presented a fine specimen to the Academy, found on the west branch of the Potomac, about fifteen miles below Alexandria.

PECTEN.

1. P. *Jeffersonius*. Pl. ix. fig. 1. Subequivalve, with from nine to eleven striated ribs.

Description. *Shell* rounded, convex, not quite equivalved, one of the valves being a little more

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convex than the other; the whole surface covered with approximate, scaly striæ: *ribs* elevated, rounded, with six or seven striæ on the back of each; interveming grooves profound: *ears* equal; sinus of the ear of the superior valve, not profound, being barely one eighth part of the length of the ear: *within* with broad rounded flattened ribs.

Length five inches and three-tenths, breadth five inches and seven-tenths.

Specimens of this truly fine shell are not uncommon. The Academy has been long in possession of several single valves, in an excellent state of preservation, obtained by my friend Mr. J. Gilliams, and others which were presented by Mr. Watson, who purchased them at the sale of the collection of the late Professor Barton. Mr. Finch has succeeded in obtaining entire specimens of the two valves of the same individual. I am of the opinion that Lister's plate 167, is intended to represent this shell, and that the singular appearance of the marginal striæ in that figure is a deviation from the ordinary formation of the species, and is owing to the dislocation of the lines of increment, and obliteration of the longitudinal striæ. Lister describes his specimens to be of a "blue-clay colour," in this respect perfectly corresponding with two specimens before me.

On one of the specimens is an imperfect ASTREA.

2. P. *Madisonius*. Much compressed, with about sixteen striated ribs.

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DESCRIPTION. *Shell* rounded, much compressed; the whole surface covered with scaly striæ: *ribs* elevated, rounded, with about three striæ on the back of each; intervening grooves rather profound: *ears* equal, sinus of the ear of the superior valve profound, extending at least one third of the length of the ear.

Length rather more than four inches and a half; breadth four inches and four-fifths.

In magnitude this shell is justly entitled to compare with the preceding; but it differs in being much less convex, and in having a much more profound sinus in the ear of the superior valve. Three specimens, from which the above description was taken, belong to the Academy, and were presented by Mr. Watson.

3. P. *Clintonius*.* Pl. ix. fig. 2. Auricles equal; surface with from one hundred and forty to one hundred and eighty elevated longitudinal lines.

DESCRIPTION. *Shell* suborbicular, compressed, with very numerous, regular, elevated striæ, which are muricated with minute scales formed by transverse wrinkles, that are sparse in the middle of the length, and crowded each side of the shell; the intervening spaces are regularly concave, and in parts very distinctly wrinkled: *auricles* equal,

* Mr. Finch requested that three species of his collection that might prove to be new, should be dedicated to the distinguished men whose names these shells bear.

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striated like the general surface: *within* simple, margin striated.

Length four inches; breadth rather more.

This is a very fine shell, comparable with the *magellanica;* but the sides below the auricles decline much more rapidly towards the base, and the striæ, judging from Bruguiere's figure, are much more prominent and distinct.

4. P. *septenarius.* Pl. ix. fig. 3. *Shell* convex, suborbicular: *auricles* subequal: *surface* with numerous slightly scaly striæ, and about seven remote ribs, of which the three intermediate ones are much elevated, rounded, or slightly flattened on the top.

Length nearly two inches and seven-tenths.

But a single imperfect, inferior valve, occurs in Mr. Finch's collection; but this is so perfectly distinct from any other that I have seen described, that I have no hesitation to describe it as new. The striæ are equally distinct on the ribs, and in the intermediate spaces. The scales are rather thick, very small, and not confined to the striæ, but are also observable in the spaces between the striæ.

PLICATULA.

P. *marginata.* Pl. ix. fig. 4. a. External view. b. Internal view. Shell ovate-cuneiform, somewhat arcuated at base; with about three much

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elevated folds, producing very profound undulations on the edge of the shell; the intermediate fold is bifid; the whole surface is marked by rather gross concentric wrinkles; inner margin dusky or blackish, with a series of granules on one valve, received into corresponding cavities in the opposite valve.

Length one inch and a fifth, breadth one inch.

This species is very distinct from the P. *plicata*, Linn. of the West Indies, and from that of the East Indies, hitherto confounded with the *plicata*, but to which Lamark's name of *gibbosa* may be transferred.

Of the known fossil species, it seems to approach nearest to the *angulata*, Lam. but the folds are neither squamous nor angulated.

ARCA.

1. A. *arata*. Pl. x. fig. 1. Shell transversely oblong, subrhomboidal, with about twenty-six longitudinal ribs; basal edge nearly parallel to the hinge margin, which latter terminates anteriorly in an angle.

Description. *Ribs* somewhat flattened, as wide or rather wider than the intervening spaces; the whole surface concentrically wrinkled: *umbones* not remarkably prominent: *apices* remote, the intervening space rhomboidal, with continued indented lines, arcuated under the apices: *hinge*

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margin perfectly rectilinear, angulated at the extremities, the anterior one a little projecting: *teeth* in a continued, uninterrupted line, parallel, excepting at the two extremities of the line, which decline a little, and the teeth are there decidedly longer and oblique with respect to the others of the range: *posterior end* obliquely rounded to the base: *base* nearly rectilinear and parallel to the hinge margin, and deeply crenated on the inner margin: *anterior end* produced below the middle, and rounded, and a little contracted near the superior angle.

Length from the hinge margin to the base one inch and three-tenths, breadth two inches and a half.

This resembles a species found recent and very common in the West Indies, and which I have not ascertained to be distinctly described. That shell, however, is proportionally longer, the anterior extremity only of the line of teeth declines a little, and the series is slightly dislocated a little before the apices of the shell.

2. A. *centenaria*. Pl. x. fig. 2. Shell transversely-oval, subrhomboidal, obtusely contracted at base, with numerous alternate longitudinal striæ.

Description. Striæ from one hundred to one hundred and eighty and more in number; disappearing on the hinge margin; with hardly obvious transverse minute wrinkles, and larger, remote, irregular ones of increment: *beaks* but little pro-

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minent, not remote: *base* widely but not deeply contracted, nearly parallel with the hinge margin: *anterior* and *posterior margins* obtusely rounded: *series of teeth* rectilinear, uninterrupted, decurved at the tips; space between the beaks with numerous grooves proceeding from the teeth: *inner margin* not very distinctly crenated: *muscular impressions* elevated, and forming a broad line each side, from the cavity of the beak to the margin.

Length nine-tenths of an inch, breadth nearly one inch and a half.

3. A. *incile.* Pl. x. fig. 3. Shell transversely rhomboidal, with about twenty-seven ribs; anterior hinge margin compressed and angulated.

Description. *Disk* prominent from the beaks to the anterior part of the base: *ribs* with transverse granules; those anterior to the middle alternating with very slender and but little prominent lines, and with a groove on each: *anterior margin* longer to the base than the posterior end, and contracted in the middle: *series of teeth* nearly rectilinear, entire; interval between the teeth and the apices with a few transverse lines or wrinkles; a single oblique groove from the apex to a little before the middle, and six or seven narrow ones from the teeth outwards behind the apices: *beaks* placed very far backward: *inner margin* crenated: *muscular impressions* a little elevated, posterior one short: *basal margin* not parallel with the hinge margin.

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Length nearly seven-tenths of an inch, breadth less than one inch and a fifth.

PECTUNCULUS.

P. *subovatus*. Pl. x. fig. 4. Longitudinally short ovate, with about thirty longitudinal impressed acute lines, the intervals a little convex.

Description. *Shell* increasing in width by a slightly curved line from the apex to beyond the middle: *lateral curvatures* equal: *apices* separate, small, central; intervening space with but little obliquity to the plane of the shell, with obsolete angulated lines: *teeth* forming a regularly and much arcuated series, which is rectilinearly truncated above so as to leave in that part a mere edentulous elevated line: *within* destitute of striæ: *margin* with elevated angular lines: *exterior surface* with about thirty longitudinal, impressed, acute lines, the intervals a little convex.

Length from the apex to the base one inch and thirteen-twentieths, breadth one inch and a half nearly.

The character of the interval between the beaks is not unlike that of a Cucullæa, but the arrangement of the teeth does not correspond with the definition of that genus.

This shell varies a little in form, being sometimes nearly orbicular.

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NUCULA.

1. N. *lævis.* Pl. x. fig. 5. Transversely elongate-subovate, rostrated, nearly smooth.

Description. *Shell* compressed, thin, fragile, polished, smooth, slightly wrinkled towards the base: *beaks* nearly central, hardly prominent beyond the hinge margin, rounded, approximate: *series of teeth* subrectilinear, a little arcuated behind; teeth prominent: *hinge margin* exteriorly both before and behind the beaks rather abruptly compressed: *posterior margin* rounded: *anterior margin* somewhat rostrated, the anterior hinge margin rectilinear, very little reflected at tip: *inner margin* simple.

Length nearly half an inch, breadth nearly one inch.

This shell may be compared with the N. *pellucida*, Gmel. but it is shorter, in proportion to its width, and the beaks are nearer the centre. It is still more closely allied to a recent species of our coast, that has probably been hitherto considered as the *rostrata*.

2. N. *concentrica.* Pl. x. fig. 6. Transversely elongate-subovate, rostrated, concentrically striated.

Description. *Shell* convex: *rostrum* considerably narrowed towards the tip: *surface* concentrically striated with numerous, regular, equidistant,

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rounded lines: *beaks* rather behind the middle: *ligament margin* a little concave: *series of teeth* angulated at the beaks.

Length over one-fifth, breadth two-fifths of an inch.

The regularly striated surface gives this shell a very pretty appearance. In outline it has some resemblance to the *rostrata*.

VENERICARDIA.

V. *granulata*. Pl. xii. fig. 1. Suborbicular, with about twenty-five convex ribs, and wrinkled across; inner margin crenate.

Description. *Beaks* nearly central, a little prominent, curved backward: *ribs* granulated on the umbones, and transversely wrinkled near the base, convex: *apices* somewhat prominent beyond the general curve of the shell: *inner margin* and *edge* crenate: *cardinal* teeth two.

Length from the apex to the base four-fifths of an inch, breadth nearly the same.

Rather proportionally longer than the *decussata*, and more oblique.

CRASSATELLA.

C. *undulata*. Pl. xi. fig. 2. a. External view. b. Internal view. Much compressed, transversely oblong-subovate, slightly angulated before; surface

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rather coarsely wrinkled, and on the umbo with small, regular undulations; umbo flattened: *apex* subacute, not prominent, placed a little behind the middle of the shell: *hinge* teeth distinct, prominent: *fosset* much dilated; a profound groove on the anterior inner margin: *edge* not crenated; on the exterior anterior margin and submargin are two undulations, of which the former is less distinct and more acute.

Width rather less than one inch and nine-tenths to four inches and three-fifths, length less than one inch and three-tenths to about three inches.

The species to which this is most closely allied, is the *compressa*, Lam. Its compressed form, and the somewhat elevated lines on the anterior part of the shell, seem to be very similar; but that species is proportionally much broader behind, the beaks are much nearer the posterior extremity, and the inner edge is crenated. A perfect valve was purchased at the sale of the late Professor Barton's collection by Mr. Watson, and by him presented to the Academy. Its locality was not known, but a fragment which I dissected out of a mass containing fragments of PERNA, belonging to the collection of Mr. Finch, has decided this question.

ISOCARDIA.

I. *fraterna*. Pl. xi. fig. 1. a. Hinge 2. b. Back view. Cordate-globose, slightly oblique, with ra-

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ther large concentric wrinkles, and lines of growth; an elevated undulation on the anterior submargin, marking the greatest length of the shell: *umbones* not very prominent, apex rather suddenly incurved, acute; impressed space behind the beaks, dilated and rather profound; anterior tooth striated externally, and placed on the middle of the anterior margin.

Large specimen, greatest length taken obliquely, three inches and a half, breadth rather less.

Small specimen, greatest length rather over one inch and a half, breadth nearly one inch and four-fifths.

This shell is so much like the VENUS *rustica*, Sowerby, that I hesitated to give it a distinct name. Besides being somewhat less transverse, it may be remarked that the hinge groove, behind the primary tooth, is much more elongated; but notwithstanding these differences, such is the general correspondence of the two shells, that I should not be surprised if this should prove to be only a variety of the *rustica*.

A large specimen which formerly belonged to the collection of the late Professor B. S. Barton, was presented to the Academy by Mr. Watson. A smaller one was obtained by carefully dissecting one of the friable masses containing fragments of the Perna, in Mr. Finch's collection.

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TELLINA.

T. *æquistriata.* Pl. x. fig. 7. *Shell* transversely ovate-orbicular, with an elevated line or fold on the anterior margin: *surface* with fine, somewhat elevated, concentric, nearly equal, numerous striæ, forming grooves between them: *apex* nearly central, acute: *cardinal teeth* deeply grooved: *lateral teeth* two; edge within, simple.

Length seven-tenths, breadth nineteen-twentieths of an inch.

In general outline, this species has a resemblance to T. *ostracea*, Lam. In one specimen the apex is central, and in another it is placed before the middle.

LUCINA.

1. L. *contracta.* Pl. x. fig. 8. *Shell* convex, suborbicular, with numerous concentric, regular, equidistant, elevated, membranaceous striæ, and intermediate smaller transverse lines: *umbones* not very prominent: *apices* proximate, nearly central: *anterior hinge margin* rectilinear, to an obtuse angle near the middle of the anterior margin: *anterior submargin* with a very slightly impressed line: *posterior margin* rounded: *cardinal teeth* one in the left valve, and two in the right, the posterior one of which is subbifid at tip: *lateral*

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teeth none: *within* obsoletely striated towards the margin: *posterior muscular impression* perfectly rectilinear, elongated, and oblique.

Length one inch and nine-tenths, breadth two inches and one-tenth.

The posterior muscular impression is even more elongated and slender than that of L. *jamaicensis*, Chemn. In outline it is like L. *scabra*, Lam. The impressions both before and behind the beaks are very slender and contracted. A young specimen belonging to the Academy, was brought from Maryland by Mr. Jacob Gilliams.

2. L. *anodonta*. Pl. x. fig. 9. Orbicular, slightly transverse, compressed; teeth obsolete.

Description. *Shell* with elevated wrinkles; orbicular, a little transverse, with a very slight impressed longitudinal line on the anterior margin: *anterior* and *posterior ends* equally curved: *apices* not prominent beyond the general curve of the shell, with a very short deep emargination behind them: *teeth* obsolete; both the cardinal and lateral ones are generally altogether wanting: *lunule* short, cordate, profound.

Length from the apices to the base one inch and one-tenth, breadth one inch and one-fifth.

The impressed line on the anterior part of the shell is hardly visible in many specimens, and is sometimes only a very slight undulation, not observable but on close inspection. In the specimens, the ligament of the hinge still remains, ap-

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parently but little changed; by pressure of the nail it is readily separated into flaxy filaments.

3. L. *subobliqua.* Orbicular, slightly oblique, a little compressed; teeth prominent; lunule not distinct.

Description. Shell concentrically wrinkled; a little oblique forwards, the most prominent part of the basal curvature being anterior to the middle; no appearance of an impressed line on the margins, which are rounded, the hinge margin being rectilinear for a short distance: *lunule* none, or consisting only of a slightly impressed line: *beaks* slightly prominent: *muscular impressions* dilated, submarginal: *cardinal teeth* prominent, the larger one with a groove: *lateral teeth* none.

Length four-fifths of an inch, breadth nearly the same.

4. L. *cribraria.* Pl. xiii. fig. 1. Orbicular, convex, with numerous longitudinal costæ, and distinct elevated concentric lines.

Description. *Shell* with close set, longitudinal, equal, granulated ribs, and more or less elevated, distinct, concentric lamellæ: *hinge margin* obtusely and not prominently angulated at its anterior and posterior terminations: *anterior margin* with a dilated slightly impressed, and not very obvious groove: *lunule* oblong-oval, very distinct, the edge near the beaks extending inwards beside the primary teeth: *lateral teeth* very distinct, the posterior one placed nearly under the middle of the

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lunule: *within* crenate on the edge: *posterior muscular impression* rectilinear.

Length half an inch, breadth eleven-twentieths of an inch.

Two or three smaller specimens are two-fifths of an inch long. In the outline of the edge, and number of the costæ, this species approaches the L. *scabra* of authors; but it is more convex, and in other respects sufficiently distinct. In the larger specimens, the transverse lamellæ are almost obsolete at base, and the ribs prevail in that part.

L. *divaricata.* Var. The fossil specimens of Maryland are altogether similar to those found at present in a recent state on our southern coast. This variety is smaller than those of South America and the West Indies, and the lateral teeth are more obvious. In the collection of the Academy is a large specimen of the *divaricata* from the West Indies, that agrees with the description of the *dentata* of Wood. I should therefore be inclined to suppose, that the *dentata* is no other than a variety of the former, owing to age.

VENUS.

1. V. *deformis.* Pl. xii. fig. 2. a. View of the hinge. Shell remarkably thick and ponderous, longitudinally undulated; basal margin undulated.

Description. *Shell* subcordate, with transverse wrinkles, which are distant and regular on the

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umbones, and much crowded on the basal half; several very obtuse longitudinal undulations, of which that on the middle is more profound: *basal margin* deeply undulated in compliance with the undulations of the disk: *within* crenate on the edge: *anterior margin* flattened, and simply wrinkled.

Length nearly five, breadth six inches.

Smallest specimen, three inches and seven-tenths long, and four inches and a half wide.

This extraordinary shell has so unusual an appearance, that I should almost have been disposed to regard a single specimen as a monstrosity. The examination of several individuals proves that the species varies somewhat in form, and in the locality of the undulations.

2. V. *paphia?* Lam.

CYTHEREA.

C. *convexa.* Pl. xii. fig. 3. *Shell* subcordate; elevated convex, concentrically wrinkled, inequilateral; posterior tooth and fosset not striated; edge not crenated; umbo rather prominent; lunule dilated, cordate, marked by a simple line.

Length one inch and a tenth, breadth more than one inch and three-tenths.

On the inner surface of the shell is a prominent line in one valve, proceeding from the extremity of the impression of the retractor muscle, and

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becoming obsolete behind the cavity of the umbo; on the opposite valve is an impressed line, occupying a similar position. Whether or not this line is characteristic, I am unable to determine, having seen but two valves.

C. *concentrica.* Born. Mr. Finch's differ from those now existing on our southern coast, in being larger.

Length three inches and three-tenths, breadth three inches and two-fifths.

ASTARTE, *Sowerby.*

1. A. *undulata.* Pl. ix. fig. 5. Shell trigonate, umbones flattened, and with profound undulations; apices very acute.

Description. Basal half of the shell coarsely wrinkled, the remaining half deeply, regularly and widely undulated on the flattened umbo: *lunule* large oblong subovate, concave, separated from the disk, particularly near the beaks, by an acute angle: *beaks* prominent, approximate, acute, turned a little backward at tip: *ligament margin* concave nearly to the basal angle, and separated from the disk, near the beaks, by an acute angle: *ligament* very short: *teeth* regularly crenated each side: *basal angles* rounded: *basal edge* nearly rectilinear, or very obtusely arcuated; within finely crenated; smaller muscular impression very distinct.

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Length four-fifths, breadth rather less than nine-tenths of an inch.

Var. a. Length one inch and a tenth, breadth one inch.

A very distinct species, unlike any other yet described. It varies in proportional length, some being longer than broad, and others broader than long. I adopt Sowerby's generic name, in preference to that of CRASSINA of Lamark, for the all-sufficient reason, that it has the priority. The recent shell which I described under the name of VENUS *castanea*, Journ. Acad. Nat. Sc. vol. 2. p. 273, belongs in strictness to this genus.

2. A. *vicina*. Pl. ix. fig. 6. Trigonal with a distant, somewhat regular, impressed line; lunule much excavated; apices acute.

DESCRIPTION. *Apices* prominent: *lunule* dilated, deeply excavated, subcordate, separated from the disk, particularly near the beaks, by a subacute angle: *beaks* prominent, approximate, acute, curved backwards: *ligament margin* concave: *umbones* convex.

Length nine-tenths of an inch, breadth one inch.

Closely allied to the preceding, but numerous specimens correspond in the much more profoundly concave lunule, and in the convexity of the umbones.

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MACTRA.

Two or three mutilated specimens of a species closely allied to M. *lateralis*, nobis, but too imperfect to determine the degree of proximity.

AMPHIDESMA.

A. *subovata*. Pl. x. fig. 10. Shell transversely ovate-oval, with somewhat prominent and regular concentric striæ.

Description. *Shell* compressed: *beaks* rather before the middle, but little prominent: *anterior* submargin with an obsolete, obtuse undulation: *lunule* lanceolate: *cardinal* and *lateral teeth* prominent.

Length seven-tenths of an inch, breadth less than one inch.

CORBULA.

1. C. *cuneata*. Pl. xiii. fig. 3. *Shell* transversely ovate-trigonal, acutely angulated or somewhat rostrated before, and depressed on the anterior slope, which is separated from the disk by a subacute line: *surface* of both valves similarly striate with equal, elevated, equidistant lines, forming grooves between them; the striæ on the smaller valve are rather more distant: *umbones* not prominent.

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Length of the larger valve hardly more than the fourth of an inch, breadth more than two-fifths of an inch.

A very pretty species. It was imbedded in a mass which contained fragments of the large PERNA.

2. C. *inæquale.* Pl. xiii. fig. 3. Shell convex, transversely ovate-trigonal, rough, with unequal coarse wrinkles: *anterior margin* with a very acute but short rostrum at its inferior termination, separated from the disk by an acute line: *base* rounded and a little contracted near the anterior angle: *umbones* not prominent.

Length two-fifths, breadth rather more than half an inch.

This species has a different aspect from the preceding; it is longer in proportion to its width, more convex, and the wrinkles, though prominent, are altogether destitute of that equality which distinguishes those of the other shell.

PANOPÆA, *Menard.*

P. *reflexa.* Pl. xiii. fig. 4. Exterior and interior views. *Shell* transversely oblong-subovate: *anterior margin* somewhat narrower and longer than the posterior margin, the edge reflected: *surface* wrinkled, and profoundly so towards the base.

Length three inches and two-fifths, breadth five inches and seven-tenths.

This fine shell approaches closely to the P. *fau-*

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jas of Menard, which Lamarck seems inclined to consider as but a variety of the P. *glycimeris*, Gmel. Our shell is comparatively somewhat shorter than the latter, and its reflected anterior margin distinguishes it from the *faujas*.

SERPULA.

S. *granifera*. Pl. viii. fig. 4. Covered with longitudinal, contiguous, slightly elevated, granulated striæ.

Description. Shell subcylindric, contorted, inferior side flat; the whole surface is composed of very numerous, small, contiguous striæ, each consisting of a single row of granules; these series are alternately smaller.

Diameter of the larger end three-tenths, of the largest specimen two-fifths of an inch.

The continuity of the tube within, is interrupted by oblique diaphragms. It sometimes approaches the spiral form, and one specimen has three complete volutions of much regularity.

DENTALIUM.

D. *attenuatum*. Pl. viii. fig. 3. Arcuated; surface marked with from twelve to sixteen rounded ribs, intervening grooves simple; lines of growth numerous, distinct; aperture orbicular.

Length nearly one inch and seven-tenths.

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The species of this genus are very closely allied to each other, and at the same time they exhibit so few characters, that it is with difficulty that some of them are determined. The present seems to differ from either of those already described. In the collection of the Academy are two fragments of DENTALIA, very closely allied to this species, which were obtained by Mr. A. Jessup in New Jersey; but their imperfect state do not justify me in deciding upon a fact so important to geology as their specific identity.

Description of several new Species of HOLOTHURIA.

By C. A. LESUEUR. *Read April* 6, 1824.

Much difficulty has always attended any attempt to arrange the HOLOTHURIÆ in a natural order, owing to the contraction of the body when placed in a preservative liquid, and the consequent obliteration of many characters which distinguish the living animals.

This difficulty was sensibly experienced, and distinctly expressed, by Blainville, in the Dictionaire des Sciences Naturelles, vol. xxi. p. 315, who, nevertheless, endeavoured to group the species by correspondencies of form, and disposition of feet. These two characters I believe to be uncertain,

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inasmuch as they are variable, and often differ exceedingly after death from their appearance in the living specimen. The tentaculæ are less liable to this objection, and Lamarck has availed himself of the modifications in the form and structure of these organs, to separate the genus into two divisions.

In the following essay I have resorted to the same basis of classification, with the addition of a third division for the reception of those that have pinnated tentacula, only one species of which was known to Lamarck.

Cuvier, in his classification of the HOLOTHURIÆ, draws his characters from the arrangement of the feet; but, as we have already remarked, these organs are too various in their disposition, and are often too indistinct from contraction in alcohol, to furnish an obvious or certain guide. Some species, like the H. *briareus*, nobis, are covered with feet in every part; others have but one, two, three to five distinct ranges of feet; others again have the feet placed behind, as in the *agathophytos*, of which Peron has formed his genus CUVIERA, not yet published, and which Mr. Cuvier has figured in his Regne Animal, vol. iv. p. 15, and described p. 22, under the name of H. *Cuviera*.

† With cylindrical tentaculæ; summit terminated by a branched, flat, spherical or infundibuliform umbel.

1. HOLOTHURIA *obscura*. Tentaculæ twenty, cy-

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lindrical, umbel indefinite, subspheric; body tubular, with conic tubercles; a single foot furnished with numerous, red, small, approximated suckers.

Inhabits St. Bartholomews.

Body tubular, slightly inflated in the middle, and more slender at the extremities: *back* covered with conic tubercles, which are surmounted by small whitish tubes, as contractile as the small sheathing tubercles which support them: *anterior opening* annular, small, placed in the middle of the disk, of which the exterior margin is furnished with twenty equal tentaculæ, which are tuberculous at base, and their summits are divided into small, very short, approximated branches, resembling so many little balls, which are contiguous when all the tentaculæ are developed: *anus* terminal, furnished with slender papillæ, longer than the tubercles of the body: *foot*, or the side upon which the animal moves, with numerous, small, very short suckers: *colour* fuliginous brown; extremity of the tentaculæ blackish.

Length, when developed, six inches, transverse diameter nine lines.

H. *aglutinata.* Tentaculæ eighteen, equal, umbel infundibuliform, small; body tubular, covered with contractile tubercles: *foot* none.

Inhabits St. Bartholomews.

Body soft, tubular, covered with distant tubercles: *colour*, above very deep bistre-brown, paler beneath; the tubercles, which are irregularly dis-

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posed, do not appear to be all used in locomotion; but those of the paler side of the body seem to be more particularly employed for this purpose, and are elongated when the animal is in motion, whilst the others remain contracted, though there is not a distinct foot, as in the preceding. These inactive tubercles appear like black points, or as rounded or conic tubercles on the surface of the body: *mouth* small, placed in the centre of a disk which is surrounded by eighteen slender, cylindric, very delicate tentaculæ, of a clear yellow-bistre colour, each surrounded by a small infundibuliform umbel, which is composed of small ramifications dichotomously divided, and not contiguous with the surrounding ones when these organs are developed: *anus* small, placed in the centre of a yellowish coloured disk, which, in the state of contraction, is covered by five triangular divisions, furnished with small papillæ.

Length from three to four inches.

This species is very numerous in a small bay opposite to the port of St. Bartholomews.

They conceal themselves in rolled madrepores, which are there very abundant. A whitish viscous fluid transudes from the body, forming threads of great tenacity, which envelop the substance on which the animal rests, and attach it so firmly as to be removed with difficulty.

3. H. *maculata*. Tentaculæ twenty, slender, equal; umbel small, flat, with laciniated branches;

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body fusiform, tuberculous, pale cinereous, with bluish-black oval spots.

Inhabits St. Bartholomews.

Body soft, contractile, narrow and pointed before, inflated behind, covered with tubercles on the back and sides: *locomotive tubes* long, distant beneath: *mouth* very small, without any disk, and surrounded by twelve tentaculæ, which are slender, flaccid, transparent, very long, and surmounted by a very small umbel, the ramifications of which are also very small, and laciniated: *anus* terminal, round.

Length about four or five inches.

The form of this species is very beautiful; the body is sprinkled with oblong spots of the length of five or six lines by four or five wide, which are relieved by the pale colour of the body.

Like the preceding, it is found in Madrepores and in the same bay.

4. H. *fasciata.* Tentaculæ twenty, short, transparent, spotted; umbel plane, composed of six very short, bifurcated divisions; body soft, ornamented with five bluish-cinereous bands, and five bands covered with small inequal tubercles.

Inhabits St. Bartholomews.

Body subfistulous, soft, a little narrower at the extremities: *skin* smooth, coriaceous, thick, white interiorly, divided into ten longitudinal bands, of which five are covered with small tubercles, probably used in locomotion; but not having seen the

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animal in its state of development, I cannot speak confidently of their office: *mouth* small, placed in the centre of a small disk, surrounded by twenty tubular, transparent, short tentaculæ, which are larger at base, and surmounted by a small stelliform umbel of five or six bifurcated, whitish divisions: *anus* terminal, margined with red, and having small papillary tubes, placed in the centre of a small disk, concealed in the contracted state by five small valves or triangular divisions; the skin is of a deeper blue and smoother in the spaces between the five divisions.

Length of the largest specimens from eight to ten inches.

This animal, like the other species, has the faculty of admitting and rejecting the water by the mouth and anus. It decomposed very rapidly, and almost entirely disappeared when exposed to the air. The intestinal canal is filled with sand. It conceals itself beneath rolled Madrepores, and in their cavities, with the preceding species.

†† Tentacula arborescent.

5. H. *lapidifera.* Tentaculæ sixteen, branched and united at base, surrounding the mouth; body with scattered, small, poriform tubercles.

Inhabits St. Bartholomews.

Body cylindric, firm, contractile: *skin* smooth, ornamented with small longitudinal lines, and covered with small circles placed irregularly, from

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which are protruded fistulous organs, which serve for locomotion, and to attach the body in the cavities of madrepores; they are also used to hold small scales with which the body is in part covered, when the animal removes from its habitation: the *mouth* is capable of being dilated and elongated: the *tentacula* are united at base, and surround the mouth; the small branches of the tentacula are dilated in small membranes, twisted in a semispiral line and of a reddish colour; the interior base of the tentacula is distinguished by a very black line, and the exterior base by tubercles: *anus* terminal: *colour* pale violaceous blue, the tentacula and their base very pale hyaline blue.

Length when developed three to four inches.

In the cavities of old madrepores, and other concealed situations.

6. H. *briareus*. Tentacula eight, branches very much divided; body fistulous, entirely covered with small approximated tubes.

Inhabits the coast of the United States.

Body fistulous: *skin* smooth, soft, covered in every part with small locomotive, concealed tubes: *tentacula* very much branched, the branches somewhat foliaceous, divided, and like so many trees arranged around a disk, in the centre of which is the mouth: *anus* simple, terminal, surrounded with papillæ, which are longer and placed more closely together than those of the body: *colour* reddish or blackish, papillæ and tentacula paler.

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Length from three to six inches.

Brought from the coast of Florida by Messrs. Maclure, Ord, Say, and Peale. In the contracted state, the body seems covered with numerous small, transverse incisions. Mr. Say informs me that this species occurs very frequently on the coast of New Jersey.

††† Tentacula pinnated; body vermiform.

7. H. *hydriformis.* Tentacula twelve, flaccid, consisting of six or seven pairs of opposite processes; body red, spotted with white.

Inhabits Guadaloupe.

Body elevated, terminated behind in a point, gelatinous: ***mouth*** large, surrounded by twelve equal tentacula, united at base by a diaphanous membrane; each tentaculum is furnished with six or seven pairs of processes, which are tuberculated on each side; these small tubercles, or suckers, appear to me analogous to those of the tentacula of the ACTINIÆ; at the base of each tentaculum are two black points: ***anus*** terminal, small, without appendices; the body is furnished with very small, distant tubercles, which perform the office of suckers to fix the body to fucus, and in locomotion the tentacula are used as feet: ***colour*** of the tentacula red, varied with slight white and bluish spots; about eight longitudinal lines, of which four are more distant, and small transverse lines: ***intestinal canal*** obvious, folded three times upon itself, and at each fold much undulated.

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Length about two inches.

The tentacula are inclined alternately, by two or three pairs together, towards the mouth.

8. H. *viridis*. Tentacula eight, entire, long, with six or seven pairs of pennatulæ, and four small ones destitute of pennatulæ; body cylindric, green.

Inhabits St. Thomas.

Body cylindric, covered with small prehensile tubercles, used in adhering to submarine objects. It is usually upon coralines and plants, growing at the depth of three or four feet, that this species is found, secure from the effects of the agitation of the waves; the tentacula are in continual motion, alternately approaching the mouth: *anus* terminal; *colour* entirely green.

Length about two inches.

Observations on the Nomenclature of WILSON'S ORNITHOLOGY. *By* CHARLES BONAPARTE. *Read November* 9, 1824. (Continued.)

MUSCICAPA.

There is, perhaps, no genus more difficult to elucidate than the present; for no two authors agree respecting its divisions. Brisson, who established it, seems to have been more accurate in assigning its limits, than any of the ancient

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authors. Linné had arranged the species under MOTACILLA, but in his twelfth edition he adopted this genus, with the exclusion of some of the larger species, known by the name of Tyrants, which he improperly placed in his genus LANIUS. In this he was followed by Gmelin and Latham, who augmented the genus MUSCICAPA by adding many species, some of which do not belong to it. Lacepede divided the species into three genera, corresponding with Buffon's sections, according to the size of the birds; thus the largest species were called *Tyranni*, the middling size *Muscivoræ*, and the smallest *Muscicapæ*. Cuvier very properly contented himself with forming three subgenera, *Tyrannus*, *Muscipeta*, and *Muscicapa;* and to the latter, judiciously added the greater part of the species that he had excluded from the genus TODUS. Illiger considered Muscicapa as a whole, and assigned to it pretty natural limits. Vieillot also restricted the genus TODUS; but in my opinion he was wrong in arranging many of the TODI of Gmelin and Latham, *Muscicapæ* of Cuvier, in the genus PLATYRHYNCOS of Desmarest. He adopted the genus TYRANNUS of Lacepede, and formed two new genera, CONOPOPHAGA, which includes some of the *Muscipetæ* of Cuvier, and ALECTURUS, for two uncertain South American birds, which Temminck thinks are true MUSCICAPÆ. Vieillot's genus MUSCICAPA is therefore very extensive; and he confesses, moreover, that all the preceding genera

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would be more properly disposed as sections of this genus. Temminck distributes the great genus MUSCICAPA of Cuvier, into two genera, viz. MUSCIPETA, (nearly corresponding with Cuvier's subgenus of that name,) and MUSCICAPA; the latter being much more numerous in species, including the greater part of Cuvier's *Muscicapæ*, together with the principal portion of the *Tyranni*, which differ only by being larger and more powerful. Temminck having also restricted the genus TODUS to a single species, has distributed the other species in his two genera MUSCICAPA and MUSCIPETA. None of the sixteen species described by Wilson, or of the few since discovered within the boundaries of the United States, have sufficient characters to be entitled to rank as a distinct genus from MUSCICAPA, excepting some that are SYLVIÆ, and those which apparently belong to Temminck's third section of MUSCICAPA; for the latter, together with some other birds, I shall adopt Vieillot's genus VIREO. Thus composed, the latter genus differs so much from its original acceptation, that it is only with a view to avoid multiplying synonymes that I retain that designation.

The sixteen species of our author, all peculiar to America, will, therefore, be distributed into the genera MUSCICAPA, VIREO, and SYLVIA; the former including the largest species as a subgenus, under the name of *Tyrannus*, for which the only good differential character I can discover, is their superior size.

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113. M. *tyrannus.* Vol. ii. p. 66. This bird is not the MUSCICAPA *tyrannus* of Linné, but of Brisson; yet this name has been promulgated by Wilson, it is now familiar to every naturalist as applied to the Kingbird, and must be retained for this species.

At first sight this procedure may seem at variance with the principle of retaining all the Linnæan specific names, which I consider a just tribute to the founder of the present system of nomenclature, to which we are indebted for the existing state of the science. But *tyrannus* was also applied by Linné to this bird; it is his LANIUS *tyrannus*, and if he had transferred the bird to MUSCICAPA, I have no doubt that he would have preserved its name, and changed that of the other. In thus pursuing a course which has the additional advantage of coinciding with the generally received impression, I think myself not liable to the reproach of deviating from the principles I have adopted.

SYNONYMES.

MUSCICAPA *tyrannus*, BRISS.

LANIUS *tyrannus*, LINN.

LANIUS *tyrannus* γ *carolinensis*, and δ *ludovicianus*, GMEL. LATH. (these varieties only.)

Gobe-mouche de la Caroline, BUFF. *Pl. Enl.* 676.

TYRANNUS *pipiri*, VIEILL. *Pl.* 44.

The latter author has since changed the barbarous name of *pipiri* to that of *intrepidus*, thus exercising on his own works his habit of changing.

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114. M. *crinita.* Vol. ii. p. 75. Although the name of this species originated from the exaggerated appearance of the crest in a bad figure of Catesby, copied by subsequent authors, yet it must remain unchanged. The bird is noticed in the systems under two different names.

This and the preceding are the only species in Wilson, referred by authors to *Tyrannus.*

SYNONYMES.

Muscicapa *crinita*, Linn. Gmel. Lath.

Muscicapa *ludoviciana*, Gmel. Lath.

Muscicapa *virginiana cristata*, Briss.

Gobe-mouche huppé de Virginie, Buff. *Pl. Enl.* 569, *f.* 1. (a bad representation, principally as regards the crest, which is quite unnatural.)

Tyrannus *ludovicianus*, Vieill. *Pl.* 45.

This latter author was incorrect in considering the Muscicapa *ferox*, as the same with this bird. It is a distinct species, as he perceived in his subsequent writings; but he then added to the confusion, by changing the name of our bird to that of Tyrannus *irritabilis*, and stating that the female differs in colour from the male, even after Wilson had truly observed, that the sexes are hardly distinguishable from each other. If, therefore, there be any difference between the M. *crinita* and *ludoviciana* of authors, it must be owing to age, and not to sex.

With respect to the origin of the latter nominal species. Vieillot's conjecture is probably correct,

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that Buffon copied the figure of the *crinita* from Catesby, and afterwards, having received a specimen, he described it as new, not recognizing it in that figure. He was the first to describe the *ludoviciana*, and was followed by all subsequent writers.

115. M. *nunciola*. Vol. ii. p. 78. Wilson was wrong in adopting Bartram's name for this familiar bird, in preference to that consecrated by the fathers of the science. His reason was, perhaps, that he doubted the identity of the Muscicapa *fusca* with the *nunciola* of Bartram; but be it as it may, the former name must be restored, notwithstanding that Bartram's name is more elegant, expressive, and appropriate. If authors are to be permitted to change specific names under the excuse of improving them, there will be no end to their alterations, and our systems will be involved in utter chaos.

SYNONYMES.

Muscicapa *fusca*, Gmel. Lath. Vieill. *pl.* 40.
Muscicapa *atra*, Gmel.
Muscicapa *phebe*, Lath.
Muscicapa *Carolinensis fusca*, Briss.

116. M. *rapax*. Vol. ii. p. 81. We have here a new name applied to a species, which had been previously known, described, and named. This designation must therefore be rejected, and the bird will then be known as the Muscicapa *virens*. As this species may readily be mistaken for the preceding or the following, it may be acceptable

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to naturalists to have additional discriminating characters, taken from the comparative dimensions of the primaries. In this species, the exterior primary is nearly as long as the fourth, and much longer than the fifth; but the *second* is the longest. Of the preceding species, the first is hardly as long as the sixth, the second is equal to the fourth, and the *third* is longest.

Of the following species, the first is of the same length as the fifth, and the second and fourth are nearly equal to the *third*, which is longest.

SYNONYMES.

Muscicapa *virens*, Linn. Gmel. Lath.

Todus *obscurus*, Gmel. Lath. (Vieillot thinks it synonymous with the following.)

Muscicapa *carolinensis cinerea*, Briss.

Muscicapa *querula*, Vieill. *pl.* 39.

Wilson's quotation of the M. *acadica*, as synonymous with this bird, is inaccurate: it is the same as M. *querula* of Wilson. This quotation is the more remarkable, as our author introduces, in its proper place, Pennant's synonyme of the *acadica*, from which authors derive their M. *acadica*. It is not a little singular, that Vieillot appropriated to his species the name that Wilson gave to the following.

117. M. *querula*. Vol. ii. p. 77. This is the M. *acadica* of authors, and therefore that name must be restored. The name *querula* must be rejected,

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for the additional reason, that Vieillot had already applied it to the preceding species. Thus two authors have made use of the same name for two birds that, from their close affinity, did not require this circumstance to endanger their being mistaken. The M. *querula* of Wilson is, therefore, the *acadica*, and that of Vieillot is the *virens*; and as both these closely allied species may be mistaken for the M. *fusca*, a new specific phrase for each may be acceptable.

M. *fusca, Gmel.* (*nunciola, Wilson.*)

Fusco-cinerea, capite nigricante; subtus ochroleuca; rostro toto pedibusque nigris; cauda subforficata; rectrice extima latere exteriore albida.

M. *virens, L.* (*rapax, Wils. querula, Vieill.*)

E virescenti fusco-cinerea, subtus sordide ochroleuca; rostro supra nigro, subtus pallide lutescente; cauda subforficata; remige secunda omnium longissima.

M. *acadica, Gmel.* (*querula, Wils. not of Vieill.*)

Virescens, subtus ochroleuca; alarum fascia gemina albida; rostro nigro subtus carneo; cauda subrotundata; remige tertia omnium longissima.

SYNONYMES.

Muscicapa *acadica*, Gmel. Lath. Vieill.

Muscicapa *canadensis olivacea*. Briss. (considered by Linn. and Lath. as a variety of the Muscicapa *olivacea*.)

Muscicapa *subviridis*, Bartram.

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Vieillot has not given a figure of the *acadica*, and copies the little he says of it from other writers. In the Nouv. Dict. d'Hist. Nat. he gives it the name of PLATYRHYNCOS *virescens*, and adds a correct account of it taken from Wilson. He thinks the TODUS *obscurus* of Latham is no other than this species; but we are of the opinion that it is the preceding, and we have quoted it accordingly.

Vieillot's arrangement of this species shows evidently that the genus PLATYRHYNCOS, in his acceptation of it, is unnatural, since he generically separates these species from each other, which are so closely allied as to be proximate species in the same section. The only difference is, that the bill of the *acadica* is but a very little wider and flatter.

118. M. *ruticilla*. Vol. i. p. 103, and vol. v. p. 119. (Young.) The very great difference exhibited by the perfect plumage of the male of this pretty little bird, from the dress of the female, young and autumnal male, has led authors into the error of describing it under two different names. And it is worthy of remark, that in its humble dress it has been referred to the genus SYLVIA. Cuvier arranges it under his subgenus *Muscipeta*; but other writers, who admit that group as a genus, consider it a MUSCICAPA. We are ignorant of the opinion of Temminck, but we find no character that justifies its separation from MUSCICAPA, of which we consider it a genuine species. A re-

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markable character of this bird, common, however, to several others of the genus, is that it has the four outer primaries nearly equal in length.

SYNONYMES.

Muscicapa *ruticilla*, Linn. Gmel. Lath. Vieill. *Pl.* 35, (male) *Pl.* 36, (female.)

Motacilla *flavicauda*, Gmel. (female, young and autumnal male.)

Muscicapa *americana*, Briss.

Gobe-mouche d'Amerique, Buff. *Pl. Enl.* 566, *fig.* 1, (male in full plumage.) *fig.* 2, (female.)

119. M. *cærulea*. Vol. ii. p. 164. Wilson transferred this very small bird from Sylvia, in which it always was, and has since been placed by authors, to Muscicapa, probably from the circumstance of its bill being a little depressed and flattened at base. This character certainly proves an alliance with that genus; but the slenderness and elongation of the bill, induces us to comply with the decision of all other authors, and replace it in Sylvia. Wilson was probably not aware that the name of *cærulea* is pre-occupied in Muscicapa; and as this is the case, the name would be changed in that genus; but as we refer it to Sylvia, the first name must be retained. It may be considered a connecting link between Sylvia and Muscicapa. A small intermediate subgenus may be formed for it, and for a few others related to it.

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SYNONYMES.

MOTACILLA *cærulea*, LINN. GMEL.
SYLVIA *cærulea*, LATH. VIEILL. *Pl.* 88.
MOTACILLA *cana*, GMEL. (young.)
SYLVIA *cana*, LATH. (young.)
FICEDULA *pensylvanica cinerea*, BRISS.

This bird is not represented in Buffon's *Planches Enluminées*, though two of his figures are very like it: of these, one is the *Figuier de Madagascar*, *pl.* 705, *fig.* 3, (SYLVIA *livida*, LATH.) which, but for the locality, we should believe to be the same; and the other is the *Figuier à tête noire de Cayenne*, (*pl.* 704, *fig.* 1,) which we cannot agree with authors in considering as a variety of it.

120. M. *sylvicola*. Vol. i. p. 117. This bird is one of three, of which Vieillot originally formed his genus VIREO, which we adopt, as very natural and intermediate between MUSCICAPA and TANAGRA; to these species he judiciously added, in the Nouveau Dict. d'Hist. Nat. the MUSCICAPA *solitaria* of Wilson, as a fourth species. We think proper to enrich this small genus with two other species, as will be seen hereafter. All the known VIREONES are inhabitants of North America. The genus is thus characterized:

Bill rather short, a little robust, and compressed; upper mandible incurved at tip, and emarginated; inferior mandible shorter, recurved at tip, with the sides narrowed in and rounded beneath; nares at the base of the bill rounded; tongue car-

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tilaginous and bifid at tip; mouth ciliated at the corners; wings with the second or third primary longest; toes four, three before and one behind; the exterior ones united at base.

All the species live in the woods, feeding on insects and berries, but principally on the former, and are therefore migratory and only summer visitants.

Vieillot places this genus in the same family with the TANAGRÆ, (his PERICALLES,) but we arrange the TANAGRÆ in the family of the PASSERINI, and the present genus with SYLVIA and MUSCICAPA in that of the CANORI.

Vieillot's specific name for the present species has the priority, and must therefore be adopted in preference to that of Wilson; the bird will then be known by the name of VIREO *flavifrons*.

SYNONYME.

VIREO *flavifrons*, VIEILL. *pl.* 54.

He thinks the TANAGRA *olivacea* of Gmel. and Lath. is the female of this species; but our impression is that this bird is the female, young or autumnal male of TANAGRA *rubra*, and we have therefore quoted it as such.

121. M. *solitaria*. Vol. ii. p. 143. This rare, new species of Wilson, was never observed by Vieillot, who, however, probably from Wilson's statements and accurate figure, very properly arranged it in his genus VIREO, in the Nouveau Dict.

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d'Hist. Nat. as above mentioned, retaining the specific name given by its discoverer. This is the course that a naturalist ought always to follow, in transferring a badly classified species to its proper genus, unless the specific name be pre-occupied in that group.

Our bird is therefore the VIREO *solitarius*. We have much pleasure in pointing out to the reader the remarkable acuteness of Wilson with regard to this species. "It appears," says he, "to belong to a particular family or subdivision of the MUSCICAPA genus, among which are the white-eyed, the yellow-throated, and several others already described in the present work." These are precisely the species forming the genus VIREO, which therefore our author evidently detected; and modesty alone, probably, prevented him from venturing to make the division.

122. M. *cantatrix*. Vol. ii. p. 166. This is also a VIREO, and it offers an evidence of the impropriety of changing specific names in order to improve them. Wilson, after Bartram, called it *cantatrix*, (it is probably by a typographical error that it is marked as new in the catalogue, since the synonymes are given in the text,) and Vieillot named it VIREO *musicus*, both wishing to give a better name than that of *noveboracencis* of Gmelin. Their names, and especially that of Vieillot, are certainly preferable, as being more elegant and appropriate; but we have thus three names for

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the same bird; and this principle once admitted, every naturalist might give a name of his own, and universal confusion would be the inevitable result. For instance, if those naturalists are right thus to commemorate the vocal powers of the bird, I must have the privilege to consider the white eye a better discriminating mark, and to name it accordingly. We must therefore be content with the prior name, bad as it is, and call the bird VIREO *noveboracensis*.

SYNONYMES.

MUSCICAPA *noveboracensis*, GMEL. LATH.
VIREO *musicus*, VIEILL. *pl.* 52.

123. M. *melodia*. Vol. v. p. 85. In his large work, Vieillot has placed this bird in his genus MUSCICAPA, but he has since transferred it to SYLVIA. In my opinion its true place is in VIREO, of which genus it has all the characteristic marks. Vieillot's specific name having the priority, must be retained, and the species will then be known as the VIREO *gilvus*. It is with much pleasure that we are able to reject the bad name of *melodia*.

SYNONYMES.

MUSICAPA *gilva*, VIEILL. *pl.* 34. (Figure badly coloured.)
SYLVIA *gilva*, VIEILL. *Nouv. Dict. d'Hist. Nat.*

124. M. *olivacea*. Vol. ii. p. 55. Vieillot pursued the same course, with respect to this bird, as for the preceding. He placed it with the MUSCI-

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CAPA in his *Ois. de l'Amer. Sept.* and afterwards with SYLVIA. We consider it a VIREO, although it differs somewhat from the other species, in having a more elongated bill; a character by which it certainly approaches SYLVIA, with which, in fact, VIREO is allied as well as with TANAGRA and MUSCICAPA.

The present bird may readily be mistaken for the preceding, with which it corresponds in colour, but it is larger, the colours are much more vivid and striking, and the longer and more robust bill and red eyes, will distinguish it on comparison. This resemblance has, however, been productive of great confusion in the history and habits of the species, from which Wilson only is free.

SYNONYMES.

MUSCICAPA *olivacea*. LINN. GMEL. LATH. (not the variety as above stated.) VIEILL. (from these authors.)

MUSCICAPA *jamaicensis*. BRISS.

MUSCICAPA (since SYLVIA) *altiloqua*. VIEILL. *pl.* 38. (It is because he did not examine the recent eyes, that Vieillot states this species to differ from *olivacea*, in not having them red. His *altiloqua* is evidently the *olivacea*; and it is worthy of remark, that he has not mentioned the colour of the eyes; he has therefore introduced confusion, instead of elucidating the subject.

Bartram called this bird MUSCICAPA *sylvicola*, a name which Wilson transferred to the VIREO *flavifrons*.

125. M. *cucullata*. Vol. iii. p. 101. This species

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has been arranged by different authors under Muscicapa, Parus, and Sylvia. And although Wilson considers it as well characterized a Muscicapa as any other, yet, by the form of its bill, it is evidently a Sylvia, in which latter, we agree with Gmelin, Latham, Pennant and Vieillot, in placing it. We cannot conceive Wilson's reason for choosing a doubtful synonyme, in preference to the well-established prior name which we shall, of course, re-establish, by calling the species Sylvia *mitrata*.

SYNONYMES.

Motacilla *mitrata*. Gmel.

Sylvia *mitrata*. Lath. Vieill. *pl.* 77.

Sylvia *cucullata*. Lath.

Parus *carolinensis torquatus*. Briss. (Catesby also considered it a Titmouse.)

Gobe-mouche citrin de la Louisiane. Buff. *Pl. Enl.* 666. *f.* 2.

The latter author in his *Hist. Nat. des. Oiseaux*, also considers it as a Titmouse, making two species of it.

126. M. *canadensis*. Vol. iii. p. 100. This rare species escaped the researches of Vieillot, who erroneously in his great work suspected it to be an imperfect state of Sylvia *blackburniæ*; The bird cannot be permitted to remain in the same genus with the Pewit and other flat-billed species, but it is a decided Sylvia, having only the habits, and the bristles at the base of the bill of the Flycatchers; characters which induced Wilson, under the authority of former writers, to place

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it in MUSCICAPA, but the same characters exist in several other SYLVIÆ. The name being pre-occupied in that genus, we are under the necessity of giving it a new one. We call it SYLVIA *pardalina*.

SYNONYMES.

MUSCICAPA *canadensis*. LINN. GMEL. LATH.
MUSCICAPA *canadensis cinerea*. BRISS.

127. § M. *pusilla*. Vol. iii. p. 103. As I have never seen this new species, I am not competent to say any thing with certainty of it. My impression, however, is, that it is not a genuine MUSCICAPA, but that it will prove to be a SYLVIA; in which genus its specific name must be changed, being pre-occupied by three others. I propose for it the name of S. *Wilsonii*.

128. § M. *minuta*. Vol. vi. p. 62. A new species of Wilson omitted in the index. We have never seen it, but judging from the too much reduced figure we rather think it a SYLVIA. The specific name is pre-occupied in MUSCICAPA, and also in SYLVIA, Wilson having applied it to one of his new Warblers; but as I have discovered that his S. *minuta* is the S. *discolor* of Vieillot, his specific name for this species, if it be a SYLVIA, may be retained.

ALAUDA.

Three species are referred to this genus by our author, only one of them, however, belongs to it, as it is now limited.

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129. A. *magna*. Vol. iii. p. 20. This bird, which is peculiar to this country, is not a Lark, but a Starling (STURNUS.) Wilson was misled by some European author; but Latham had already observed that the ALAUDA *magna* is the STURNUS *ludovicianus*, which name must be exclusively adopted.

SYNONYMES.

STURNUS *ludovicianus*. LINN. GMEL. LATH. BRISS. (Winter Plumage.)

ALAUDA *magna*. LINN. GMEL. (Summer dress.)

MERULA *americana torquata*. BRISS. (Summer dress.)

Etourneau de la Louisiane, BUFF. *Pl. Enl.* 256. (Winter dress.)

Wilson endeavoured to prove this bird a Lark, and it is a remarkable circumstance that he only quotes the synonymes of ALAUDA *magna*, without mentioning that of STURNUS *ludovicianus*, nor any other of the synonymes referred to that by former writers; thus conveying the idea that they are two different birds, which is certainly not the fact, and which probably induced Stephens to make a nominal species.

Vieillot has lately formed for this bird the genus STURNELLA, which, with his STURNUS and BUPHAGA, form his family LEIMONITES. That genus may be adopted as a subgenus. This author also changed the specific name to that of *collaris*. Daudin makes a CASSICUS (ICTERUS) of it.

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130. * ALAUDA *alpestris*. Vol. i. p. 85. After discussing a long series of species peculiar to North America, we again arrive at one to which we can prefix the sign which indicates a common habitation to both continents. It will be observed, that only such birds as winter here are common to the two continents, the reason for which is very obvious since the European and American birds of that description meet at the pole, and can from thence visit either hemisphere. This is the only true Lark hitherto found in the United States, where it extends its migrations much further south than in Europe.

SYNONYMES.

ALAUDA *alpestris*. LINN. GMEL. LATH. TEMM.
ALAUDA *flava*. GMEL. (adult male in breeding dress.)
ALAUDA *virginiana*. BRISS.
Alouette de Siberie. BUFF. *Pl. Enl.* 650. *fig.* 2.
Bartram called it ALAUDA *campestris gutture flavo*.

131. * A. *rufa*. Vol. v. p. 89. The genus ALAUDA has been, very properly, deprived of those species whose slender and emarginated bill prove a more intimate connexion with MOTACILLA than with ALAUDA. Bechstein made this separation, and placed the discarded species in a separate genus, which he called ANTHUS. This genus is now adopted by Temminck, Vieillot, and all the best modern Ornithologists. Cuvier places it as a subgenus under his extensive group of MOTACILLA,

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which is rather a family than a genus. The present species is the only ANTHUS yet known to inhabit North America, and is also found in Europe.

It is probably by mistake that Wilson calls this bird Al. *rufa*, since that name had been already given by Gmelin to two different species, both distinct from our bird, which is the Al. *rubra* of Gmelin and Latham. Finding the name *rubra* improper, our author changed it to that of *rufa*, not thinking that the latter name was doubly preoccupied. But this is of little importance since it is now proved that the Al. *rubra* (*pensylvanica* of Brisson) is the same with the European ANTHUS *aquaticus* of Bechstein, and this changeable bird, about which there has been so much confusion, being finally settled under the latter name I think it proper to adopt it here.

But we do not understand how Vieillot can avail himself of the testimony of Wilson in favour of the union of the two species, since this author seems not to have even thought of it.

The synonymes being in a state of utter confusion, we shall be excused for attempting to give them more fully than our general plan admits of.

SYNONYMES OF THE AMERICAN SPECIMENS.

ALAUDA *rubra*. GMEL. LATH.
ALAUDA *ludoviciana*. GMEL. LATH.
ALAUDA *pensylvanica*. BRISS.
Farlouzanne, BUFF. *Ois.*
Alouette aux joues brunes de Pensylvanie, BUFF. *Ois.*

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Lark from Pennsylvania, Edw. *Glean. pl.* 297.
Red Lark. Penn. *Brit.* and *Arct. Zool.* Lath. *Syn.*
Louisiana Lark, Lath. *Syn.*

SYNONYMES OF THE EUROPEAN SPECIMENS.

Anthus *aquaticus.* Bechst. Meyer. Vieill. *nouv. diet.* Temm.

Alauda *spinoletta.* Linn. (ought not this specific name to be restored?)

Alauda *campestris* ß. *spinoletta.* Gmel. Lath.

Alauda *obscura.* Gmel. Lath. (young.)

Alauda *petrosa* Montagu *Trans. Linn. Soc. Lond.* (young.)

Anthus *rupestris.* Nilsson *Orn. Suec.*

Alouette pipi. (by error) Buff. *Pl. Enl.* 661. *f.* 2.

Meadow Lark var. A. Lath. *Syn.*

Dusky Lark. Lath. *Syn.* (young.)

Anthus *montanus.* Koch *Bayerische Zool.*

The latter nominal species, as Temminck observes, was formed of an adult male, as it appears during the few days of breeding, when they have a roseate tint on the neck, breast, upper part of the belly and flanks.

SYLVIA.

This genus was formerly a part of the extensive genus Motacilla. Scopoli was the first to separate it. Gmelin rejected it. Cuvier considered it as forming different subgenera under Motacilla; but Latham having previously, very properly, adopted it, our author assigned to it, as usual, the same limits. Vieillot divided the genus, but Temminck preserved it nearly entire. I shall only mention the genera which I shall adopt, contain-

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ing American species. These are SAXICOLA of Bechstein and Temminck, (ŒNANTHE of Vieillot,) REGULUS of Vieillot, (formerly established by Ray,) TROGLODYTES, Vieillot, (established as a subgenus by Cuvier.) Thus reduced, SYLVIA is still extremely numerous in species, of which many inhabit the United States, and are peculiar to this continent.

As the divisions that have been made of the genus SYLVIA, seem to me unsatisfactory, I shall endeavour, on another occasion, to introduce a more natural classification; in the meantime I shall note the subgenus to which the species belongs, when this is obvious, but many necessary observations are wanting to enable me to refer some of the species with accuracy. No less than thirty-six species are described by our author.

132. S. *sialis*. Vol. i. p. 56. I agree with Vieillot in the propriety of removing this bird from SYLVIA, and placing it with S. *œnanthe*, *stapazina*, *rubetra*, *rubicola*, and others, in that genus which he calls ŒNANTHE, but which with Bechstein and Temminck, we shall call SAXICOLA, since it has all the characters and some of the habits of the first section of that genus: the American fauna is thus enriched with the genus SAXICOLA. That genus was first established by Bechstein, and is now generally adopted; it is intermediate between SYLVIA, MUSCICAPA, and one of the sections of TURDUS, not found in the United States, but including the T. *cyanus* and *saxatilis* of Europe.

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Vieillot changed the name to that of Œnanthe on account of priority! as having been given by Gessner, Willughby and Ray. But that name is inadmissible, being pre-occupied in Botany.

The name Saxicola, though objectionable according to Illiger and other purists, as being derived from a habit, must, in my opinion, be retained, rather than that another name should be introduced, as Stephens has done by calling the genus Vitiflora. The present bird, the only North American species, belongs to the first section, with the S. *œnanthe, stapazina, aurita, &c.* of Europe. Although Temminck adopts the genus Saxicola, he still considers this bird a Sylvia.

SYNONYMES.

Motacilla *sialis*. Linn. Gmel.

Sylvia *sialis*. Lath. Vieill. *pl.* 101, (male.) 102, (female.) 103, (young.)

Recently the latter author has called it Œnanthe *sialis*.

Ficedula *rubecula carolinensis cærulea*. Briss.

La Gorge rouge de la Caroline. Buff. *Pl. Enl.* 396. *fig.* 1, (male.) 2, (female.)

133. S. *calendula*. Vol. i. p. 83. This pretty species belongs to the genus Regulus of Vieillot, or rather of Ray, considered by Cuvier as a subgenus, (but in which the latter author includes some species that we consider as true Sylviæ,) and regarded by Temminck and other modern authors as a section only of Sylvia.

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Vieillot has taken the liberty of changing the specific name to that of *rubineus*, a usurpation that cannot be permitted. It must therefore be called Regulus *calendulus*, agreeably to Stephens.

SYNONYMES.

Motacilla *calendula*. Linn. Gmel.
Sylvia *calendula*. Lath.
Parus *griseus*. Gmel. Lath.
Parus *calendula pensylvanica*. Briss.
Regulus *rubineus*. Vieill. *pl.* 104, (male with an exaggerated crest.) 105, (young, given as the female.)

134. S. *marylandica*. Vol. i. p. 88, Vol. ii. p. 163. (female.) Wilson chose Brisson's specific name in preference to that of Linné, who, for what reason I know not, considered this bird a Turdus. Linné's specific name must be restored, and the species will then be known as the Sylvia *trichas*, agreeably to Latham.

SYNONYMES.

Turdus *trichas*. Linn. Gmel.
Sylvia *trichas*. Lath. Vieill. *pl.* 85. (male.) *pl.* 86. (female.)
Ficedula *marylandica*. Briss.
Fauvette à poitrine jaune de la Louisiane, Buff. *Pl. Enl.* 709. *fig.* 2. (male.)

135. * S. *regulus*. Vol. i. p. 126. This bird and the *calendula*, are the only species of the genus Regulus known to inhabit North America. According to some authors a third species is found here, but this we believe to be a mistake. This

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species is an inhabitant of both continents: its specific name being now transferred to the genus, we think proper to adopt in its stead that given by Ray and Vieillot, of REGULUS *cristatus*, though some recent authors have called it R. *vulgaris*. For further remarks and a complete synonymy, see my continuation of Wilson's Ornithology.

SYNONYMES.

MOTACILLA *regulus*. LINN. GMEL.
SYLVIA *regulus*. LATH. TEMM.
PARUS *calendula*, *Regulus cristatus vulgo dicta*. BRISS.
REGULUS *cristatus*. VIEILL. *Nouv. dict.*
The figure in Buffon's *Pl. Enl.* does not represent this bird, neither does that of Vieillot, *Ois de l'Amer. Sept.*

136. S. *domestica*. Vol. i. p. 129. Agreeably to the principle we adopted in a former part of these observations, when speaking of some of Wilson's CERTHIÆ, this bird must be placed in the genus TROGLODYTES and subgenus of the same name. Vieillot's excellent specific name, having the priority, must be adopted, and the bird be called T. *ædon*.

SYNONYMES.

TROGLODYTES *ædon*. VIEILL. *pl.* 107.
MOTACILLA *domestica* (*Regulus rufus*.) BARTRAM.
MOTACILLA *furva*? GMEL.
SYLVIA *furva*? LATH.

137. * S. *troglodytes*. Vol. i. p. 39. With Wilson we have little or no doubt of the identity of this species with that of Europe, with which it

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corresponds exactly in appearance. It differs however, in its migratory habits, which are probably attributable to the temperature of this climate.

Vieillot has not mentioned it in his large work, but in the *Nouv. dict. d'hist. nat.* he gives it a distinct place, though not without much hesitation, under the name of TROGLODYTES *hyemalis*. It belongs to the genus and subgenus TROGLODYTES, and as the specific name is now generic, we must call it T. *Europæus*, agreeably to Leach, Vieillot, and Stephens, as that name, although not at all appropriate, has the priority.

SYNONYMES.

MOTACILLA *troglodytes*. LINN. GMEL.
SYLVIA *troglodytes*. LATH. TEMM.
FICEDULA *regulus*. BRISS.
Le Roitelet, BUFF. *Pl. Enl.* 651. *f.* 2.

138. S. *flavicollis*. Vol. ii. p. 64. Vieillot adopted for this species the name of S. *pensilis*, which must be retained; this name is not quoted by our author in his synonymes, and that of *flavicollis* is not mentioned by Vieillot, yet they are both intended to designate one species.

SYNONYMES.

MOTACILLA *pensilis*. GMEL.
MOTACILLA *flavicollis*. GMEL.
SYLVIA *pensilis*. LATH. VIEILL. *pl.* 72. (male.)
SYLVIA *flavicollis*. LATH. VIEILL. (from that author.)
PARUS *carolinensis griseus*, BRISS.
La gorge jaune de St. Domingue, BUFF. *Pl. Enl.* 686. *fig.* 1. (male.)

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139. S. *castanea*. Vol. ii. p. 97. A new species of Wilson, whose name must be adopted; it approaches the S. *ruficapilla*, Latham, and may possibly prove to be the same in a different state of plumage.

140. S. *pennsylvanica*. Vol. ii. p. 99. This handsome warbler has been described by authors, including Linné, under two different names; those of *pensylvanica* and *icterocephala*. The latter name has not been quoted by our author, but must be exclusively adopted, having been previously chosen by Vieillot in his large work.

SYNONYMES.

MOTACILLA *icterocephala*. LINN. GMEL.
MOTACILLA *pensylvanica*. LINN. GMEL.
SYLVIA *icterocephala*. LATH. VIEILL. *pl.* 90.
SYLVIA *pensylvanica*. LATH.
FICEDULA *canadensis icterocephalos*. BRISS.
FICEDULA *pensylvanica icterocephalos*. BRISS.

It is not figured in Buff. *Pl. Enl.*; the plate quoted by Gmelin and Latham, is, as Vieillot observes, the young of S. *coronata*.

141. § S. *philadelphia*. Vol. ii. p. 101. A new species of Wilson, the excessive rarity of which might lead us to suppose it an accidental variety of some other, perhaps the S. *trichas*. This name must of course be retained for this bird, which he met with but once, and which has not been seen since.

142. S. *solitaria*. Vol. ii. p. 109. According to

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Wilson, who gave the present name, this is the Pine-creeper of Edwards, *pl.* 277, upper figure, but it is not that of Catesby, which is certainly S. *pinus;* Linnè, Gmelin and Latham confounded them together, and our author first distinguished them. The S. *solitaria* will be properly placed in Cuvier's subgenus *Dacnis*, which we adopt, not however as a subgenus of Cassicus, in which he places it, but as one of Sylvia.

SYNONYME.

Parus *aureus alis cæruleis*. Bartram.

143. S. *chrysoptera*. Vol. ii. p. 113. This species, as Wilson observes, has been described under two different names. It belongs to the subgenus *Dacnis* above mentioned. The female is unknown to authors; it differs very much from the male, and will be represented in the first volume of my continuation of Wilson's Ornithology.

SYNONYMES.

Motacilla *chrysoptera*. Linn. Gmel.
Motacilla *flavifrons*. Gmel.
Sylvia *chrysoptera*. Lath. Vieill. *pl.* 97.
Sylvia *flavifrons*. Lath.
Ficedula *pensylvanica cinerea gutture nigro*. Briss.
Parus *alis cæruleis*. Bartram.

144. S. *citrinella*. Vol. ii. p. 111. Wilson's name, though much handsomer and more appropriate, cannot be admitted in preference to the generally received designation, that of S. *æstiva*.

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SYNONYMES.

MOTACILLA *æstiva*. GMEL.
SYLVIA *æstiva*. LATH. VIEILL. *pl.* 95.
MOTACILLA *albicollis*. GMEL. (young.)
SYLVIA *albicollis*. LATH. (young.)
FICEDULA *canadensis*. BRISS. (male adult.)
FICEDULA *dominicensis*. BRISS. (young.)
Figuier de Canada, BUFF. *Pl. Enl* 58. *fig.* 2. (adult male,) not the figure 1, which that author gives as the female, in which he was followed by others; but Latham, Wilson and Vieillot very correctly separated it from this species; the latter author believed it to be intended for his S. *flava*, but in that case he ought to have retained Latham's name of S. *carolinensis* for that bird.

We think Vieillot was right in considering Catesby's Yellow Titmouse, Vol. i. *f.* 63, as the S. *æstiva*: Gmelin and Latham erroneously quoted that figure for a variety of S. *trochilus*, a European bird given by them as also American, probably from the resemblance it bears to some American females of other species.

145. S. *canadensis*. Vol. ii. p. 115. Linné inadvertently gave the specific name of *canadensis* to two Warblers. Gmelin and Latham preserved the name to this species, and called the other, which, however, is but a nominal species, S. *cincta*. Vieillot having discovered that it is the same as the S. *cærulescens* of St. Domingo, preferred that name to that of *canadensis*, which, however, being prior, must be retained.

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SYNONYMES.

MOTACILLA *canadensis*. *sp.* 42, LINN. GMEL.
MOTACILLA *cærulescens*. GMEL. (autumnal.)
SYLVIA *canadensis*. LATH.
SYLVIA *cærulescens*. LATH. (autumnal.) VIEILL. *pl.* 80.
FICEDULA *canadensis cinerea minor*. BRISS.
Figuier cendré du Canada, BUFF. *Pl. Enl.* 685, *f.* 2.

146. S. *virens*. Vol. ii. p. 137. This species is correctly named, and authors agree respecting it.

SYNONYMES.

MOTACILLA *virens*. GMEL.
SYLVIA *virens*. LATH. VIEILL. *pl.* 92.
FICEDULA *pensylvanica gutture nigro*. BRISS.
PARUS *viridis gutture nigro*. BARTRAM.

147. S. *coronata*. Vol. ii. p. 138, and Vol. v. p. 121, (in winter dress.) Wilson's account of this bird is correct and complete; but although he gives a number of synonymes, yet he is far from indicating the whole number of nominal species that have been formed of its different states. He is incorrect in giving the MOTACILLA *maculosa* of Gmelin and its corresponding synonyma, as the same with this bird; it is very distinct, being the supposed new species, the S. *magnolia* of Wilson.

SYNONYMES.

MOTACILLA *coronata*. LINN. GMEL. (adult in summer dress.)
MOTACILLA *canadensis*. *sp.* 27. LINN. (adult in summer dress, unnatural by a band on the breast.)
MOTACILLA *umbria*. GMEL. (autumnal.)
MOTACILLA *cincta*. GMEL. (adult in summer dress, with the above mentioned band.)

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MOTACILLA *pinguis*, GMEL. (autumnal.)

SYLVIA *coronata*, LATH. (adult in summer dress.) VIEILL. *pl.* 78. (adult male in summer plumage.) *pl.* 79, (young.)

SYLVIA *umbria*, LATH. (autumnal.)

SYLVIA *cincta*, LATH. (adult in summer dress, deviating from nature by having the band on the breast; an error which probably originated in Brisson's figure.)

SYLVIA *pinguis*, LATH. (autumnal.)

FICEDULA *pensylvanica cinerea navia*, BRISS. (adult in summer plumage.)

FICEDULA *canadensis cinerea*, BRISS. (with the false band.)

Fauvette tachetée de la Louisiane, BUFF. *Pl. Enl.* 709, *fig.* 1. (autumnal.)

Figuier du Mississippi, BUFF. *Pl. Enl.* 731, *f.* 2, (young autumnal; erroneously quoted by Gmelin and Latham under S. *icterocephala*.)

PARUS *cedrus uropygio flavo*, BARTRAM. (autumnal.)

PARUS *aureo vertice*, BARTRAM. (summer dress.)

PARUS *virginianus*, LINN. GMEL. LATH. BRISS. (autumnal.)

SYLVIA *flavopygia*, VIEILL. (autumnal.)

SYLVIA *xanthoroa*, VIEILL. *nouv. dict.* (autumnal.)

148. S. *cærulea*. Vol. ii. p. 141. This very beautiful little species was first described and figured by our author, who having placed the S. *cærulea* of Latham with the MUSCICAPÆ, thought proper to apply that specific name to his new species, for which it is much more appropriate. But as we agree with all modern writers in regarding that species as a SYLVIA, we are unable to retain the name of *cærulea* for the present bird. With this consideration Stephens gave it the name of S.

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azurea. My friend, Mr. Say, in his excellent zoological notes, to the account of Major Long's expedition to the Rocky Mountains, calls it S. *bifasciata.*

149. S. *pinus.* Vol. iii. p. 25. We have already had occasion to speak of this bird when treating of S. *varia* (CERTHIA *maculata* of Wilson.) It is a true SYLVIA, although Linné and Gmelin arranged it in CERTHIA.

Wilson is very accurate in noticing the numerous errors of his predecessors relative to this species, and judicious in correcting them.

SYNONYMES.

CERTHIA *pinus*, LINN. GMEL.

SYLVIA *pinus*, LATH. VIEILL. (from that author, having never seen the bird.)

Misled by Edwards, these authors have at least confounded it with the S. *solitaria* of Wilson, from which their description seems to be taken.

PARUS *americanus.* BRISS.

It is not surprising that authors are obscure with respect to this bird, since they quote in their synonymy, two different species and plates, viz. that of Catesby, pl. 61, which, though very bad, is intended for our bird, and that of Edwards' *Gleanings, pl.* 277, upper figure; which is the S. *solitaria* of Wilson, as before stated.

150. S. *magnolia.* Vol. iii. p. 63. We cannot conceive how Wilson could give this species as

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new, and state that no European naturalist had noticed it, since it is the S. *maculosa* mentioned by them all, and erroneously considered by our author as the S. *coronata*. On this account we shall give a more complete synonymy than usual. The bill in Wilson's figure is inaccurate, being much too long and too thick.

SYNONYMES.

MOTACILLA *maculosa*, GMEL.
SYLVIA *maculosa*, LATH. VIEILL. *pl.* 93. (male.)
FICEDULA *pensylvanica nævia*, BRISS.
Figuier á tête cendrée, BUFF. *hist. nat. des Ois.*
Yellow rumped Fly-catcher, EDW. *Glean. pl.* 255, (male.)
Yellow rumped Warbler, PENN. *Arct. Zool.* LATH. *Syn.*

151. S. *blackburniæ*. Vol. iii. p. 64. Wilson is correct in respect to this fine species.

SYNONYMES.

MOTACILLA *blackburniæ*, GMEL.
SYLVIA *blackburniæ*, LATH. VIEILL. *pl.* 96.

152. S. *autumnalis*, Vol. iii. p. 65, has been given by Wilson as a new species. It seems not to have been noticed before or since. His name must be adopted.

153. S. *protonotarius*. Vol. iii. p. 72. This bird belongs to the subgenus *Dacnis*. Wilson expresses a decisive opinion favourable to the propriety of forming a subgenus or separate family for this bird, and a few other Warblers, distinguished alike

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for the form and acuteness of their bills, which are longer, thicker at base, and more rounded than those of the genus SYLVIA generally are. Here again he had the subgenus *Dacnis* in view; the name only was wanting.

SYNONYMES.

MOTACILLA *protonotarius*, GMEL.

SYLVIA *protonotarius*, LATH. VIEILL. *pl.* 83. (a very bad figure.)

Figuier à ventre et tête jaunes de la Louisiane, BUFF. *Pl. Enl.* 704, *f.* 2.

154. S. *vermivora*. Vol. iii. p. 74. This also belongs to the subgenus *Dacnis*, of which, or of a corresponding division, it is generally given as the type, though the bill is a little more bent than in the other species. This bird escaped Vieillot's researches.

SYNONYMES.

MOTACILLA *vermivora*, GMEL.

SYLVIA *vermivora*, LATH. VIEILL. (from authors.)

FICEDULA *pensylvanica*, BRISS.

Edwards first figured this bird, in his Gleanings, *pl.* 305.

155. § S. *peregrina*. Vol. iii. p. 83. A new species found in the western country by Wilson. I have never seen it, but, judging by its figure, it must be placed in the subgenus *Dacnis*. The species has a strong analogy with the S. *bicolor* of Vieillot, *pl.* 90, *bis*. the only difference being that the

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latter is blue on the upper parts, where the former is green.

156. § S. *formosa*. Vol. iii. p. 84. Another new species found also by Wilson in the western country. It is not noticed by any author, and Wilson's name must be adopted. If the figure be correct, the bill is remarkably large for a SYLVIA.

157. S. *minuta*. Vol. iii. p. 89. This new species of Wilson, seems to me to be the same as Vieillot's S. *discolor;* this name having the priority must supplant Wilson's.

SYNONYME.

SYLVIA *discolor*, VIEILL. *pl.* 98.

158. § S. *rara*. Vol. iii. p. 119. A rare and new species, met with but once by our author and not observed since.

159. S. *ruficapilla*. Vol. iii. p. 120. The name of this new species being pre-occupied, Wilson changed it in his index to that of *rubricapilla*. A subsequent writer had, therefore, no right to give it the name of S. *leucogastra*.

160. S. *pusilla*. Vol. iv. p. 17. Wilson was wrong in changing the name of this bird, and that which he has chosen is pre-occupied in Latham's work by a New Holland Warbler; he has, besides, given the same name to two species; though he has changed one of them in his index. Vieillot also gave a new name which is more elegant and appropriate; but nevertheless, that of SYLVIA

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americana of Latham, (PARUS *americanus* Linné,) must be exclusively adopted. It is remarkable that Gmelin, Pennant and Latham have followed Linné in placing this species in PARUS, particularly as Brisson and Buffon had perceived its true affinity.

SYNONYMES.

PARUS *americanus*, LINN. GMEL. LATH. The latter author expresses a doubt of its being a PARUS, and says it resembles SYLVIA *americana*, to which he refers Buffon's synonyme quoted below.

MOTACILLA *americana*, GMEL.
SYLVIA *americana*, LATH.
MOTACILLA *ludoviciana*, GMEL.
SYLVIA *ludoviciana*, *sp.* 105. LATH.
FICEDULA *carolinensis cinerea*, BRISS.
FICEDULA *ludoviciana*, BRISS.
Figuier cendré de la Caroline, BUFF. *Pl. Enl.* 731, *f.* 1.
SYLVIA *torquata*, VIEILL. *pl.* 99.

Thus has four names been given to this one species. This confusion will always arise whilst writers consider themselves authorized to change specific names under any pretence whatever, excepting that of pre-occupancy. We again repeat that in our own defence we must adhere to the name first given.

161. S. *petechia*. Vol. iv. p. 19. In consequence of its remarkable traits this species has never been mistaken for another. Vieillot, however, in the *Nouv. dict. d'hist. nat.* expresses an opinion in

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consequence of its excessive rarity, that it is a variety of S. *æstiva.*

SYNONYMES.

MOTACILLA *petechia*, LINN. GMEL.
SYLVIA *petechia*, LATH. VIEILL. *pl.* 91, (male.)
FICEDULA *pensylvanica erythrocephalos*, BRISS.
Figuier à tête rouge de Pensylvanie, BUFF. Ois.
Yellow red-pole, EDW. *pl.* 256, lower figure. (male.)
Red-headed Warbler, PENN. *Arct. Zool.* LATH. *Syn.*

162. S. *striata.* Vol. iv. p. 40. and Vol. vi. p. 101, (female) a well known species.

SYNONYMES.

MOTACILLA *striata*, GMEL.
SYLVIA *striata*, LATH. VIEILL. *pl.* 75, (male.) 76 (female.)
Black-pole Warbler, PENN. *Arct. Zool.* LATH. *Syn.*

163. S. *agilis.* Vol. v. p. 64. A new species of Wilson, whose name must be adopted.

164. S. *pusilla.* Vol. v. p. 100. A new species, called by a pre-occupied name, but altered in the index to that of *leucoptera*, which is pre-occupied by one of Vieillot's species, and was, therefore, changed to that of *palustris*, by Stephens; but as this also is pre-occupied, I propose for it the name of S. *sphagnosa.*

165. § S. *montana.* Vol. v. p. 113. A species discovered by Wilson near the Blue Mountains. We have not seen it, but judging by the description, and Vieillot's figure, there is a great analogy

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between it and the S. *tigrina* of Latham; the spots on the under parts are less dense in *montana*. Believing that the *tigrina* could hardly have escaped Wilson's observation, we are inclined to consider it as the same bird.

SYNONYMES.

MOTACILLA *tigrina*, GMEL.
SYLVIA *tigrina*, LATH. VIEILL. *pl.* 94.
FICEDULA *canadensis fusca*, BRISS.
Le Figuier tacheté de jaune, BUFF. *Ois.*
Spotted yellow Fly-catcher, PENN. *Arct. Zool.* EDW. *pl.* 257, lower figure. LATH. *Syn.*

166. S. *parus*. Vol. v. p. 114. A new species closely allied to several, but apparently distinct from all.

167. S. *maritima*. Vol. vi. p. 99. This elegant new species must retain the name which Wilson, its discoverer, gave to it. He obtained the male only, and that but once. I have lately shot a female bird, which I have some reasons for believing to be the mate of that species. It will appear in my continuation of Wilson's Ornithology.

(*To be continued.*)

END OF VOLUME IV.....PART I.

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JOURNAL

OF THE

ACADEMY OF NATURAL SCIENCES

OF

PHILADELPHIA.

VOL. IV.....PART II.

PHILADELPHIA:

PRINTED FOR THE SOCIETY,

BY J. HARDING.

1825

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JOURNAL

OF THE

ACADEMY OF NATURAL SCIENCES

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On the fresh water and land TORTOISES *of the United States. By* THOMAS SAY. *Read October 12th*, 1824.

Of the fresh water and land tortoises inhabiting this country, the CHELONURA *serpentina*, EMYS *concentrica*, *punctata*, and *picta*, the CISTUDA *pensylvanica*, *odorata*, and *clausa*, as well as the TRIONYX *ferox* are well known, and are even familiar to every naturalist who has devoted any attention to the Reptilia. They are all strongly characterized by nature and cannot be readily misunderstood or confounded with each other. But there are several of our species, which, either from their rarity in this region, from the obscurity of their characters, or from the want of differential descriptions, may readily be mistaken by the student. Such are the EMYS *scabra*, *reticulata*, *serrata*, *geographica*, *glutinata*, and I may add the TESTUDO *polyphemus*.

In order that these species may be better understood, I shall proceed to give specific definitions of all those above mentioned, which, inclusive of a new species of EMYS, described in this paper under the name of *biguttata*, present a list of all the species yet fully ascertained to inhabit this country.

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TESTUDO.

1. T. *polyphemus*, Daudin. Above depressed; anterior plates of the sternum elongated into a dilated projection, which surpasses the front of the superior shell; *tail* obsolete; *nails* depressed, quadrate; *jaws* denticulated.

EMYS.

2. E. *serrata*, Daudin. *Shell* oval, longitudinally wrinkled; first vertebral plate urceolate; anterior marginal scutum slender, its length equal to three times its breadth; posterior marginal scuta serrated; a blackish spot on the marginal scuta beneath: *jaws* remarkably denticulated.

3. E. *reticularia*, Latreille. *Shell* ovate; first vertebral plate quadrate, a little wider before; posterior marginal scuta entire, lateral ones beneath with three black spots over the suture of the sternum; *sternum* very narrow, elongate-oval: *jaws* unarmed.

4. E. *geographica*, Lesueur. A vertebral carina which is prominent and acute at the posterior tips of the plates; first plate suburceolate, angulated before; anterior marginal scutum slender, anterior plates of the *sternum* and posterior marginal scuta of the superior shell very concave: *jaws* unarmed.

5. E. *scabra*, Linn. *Plates* sculptured with very numerous, concentric and radiating, impressed lines, giving a granulated appearance to the whole

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surface; a large black spot on each plate of the *sternum*: *jaws* not denticulated; *superior mandible* emarginate at tip; *inferior* one acute.

6. E. *centrata*, Latr. *Shell* somewhat ovate, carinate excepting on the last plate; plates with concentric circles, either simply coloured or deeply impressed; posterior marginal scuta crenate; anterior one quadrate: *skin* whitish, with very numerous blackish spots: *jaws* simple.

7. E. *picta*, Linn. Dark brownish, plates of the shell margined with yellow: *head*, and particularly the *throat*, lineated with yellow; *jaws* denticulated.

8. E. *punctata*, Schoepff. *Shell* dark brown or blackish, with remote bright yellow, round spots; anterior costal scuta very narrow, linear: *superior jaw* emarginated; *inferior jaw* acute.

9. E. * *biguttata*, Nobis. *Shell* oblong-oval, slightly contracted in the middle, each side; anterior marginal scuta very narrow, linear: *occiput* with two very large fulvous spots: *superior jaw* emarginate; *inferior jaw* acute: *tail* rather long, simple.

10. E. *glutinata*, Daud. *Shell* similar to that of the Cistuda *odorata*, excepting that the sternum is immoveable. *Daudin.*

Cistuda.

11. C. *clausa*, Linn. *Shell* elevated, convex, oval; anterior vertebral plate somewhat urceolate; ante-

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rior marginal scuta very small; *sternum* bivalvular, completely closing the shell; *suture* before the middle: *superior mandible* hooked, *inferior* one elevated at tip and acute: *tail* short.

12. C. *pensylvanica*, Linn. *Shell* oval, convex; anterior vertebral plate very narrow behind, and gradually dilated before; marginal scuta remarkably narrowed, anterior one extremely small, quadrate; *sternum* with but eleven plates; bivalvular, intermediate portion immoveable; behind deeply emarginate, the posterior angles rounded: *superior mandible* hooked at tip; *inferior* one at tip elevated and acute: *tail* unguiculated.

13. C. *odorata*, Latr. *Shell* oval, convex; anterior vertebral plate very narrow behind, and gradually dilated before; marginal scuta remarkably narrowed, anterior one extremely small, quadrate; *sternum* with but eleven plates, anterior portion moveable, valvular; behind emarginate, the posterior angles acute: *mandibles* simple, rounded at tip.

CHELONURA.

14. C. *serpentina*, Linn. *Shell* subovate, depressed; *plates* with small elevated points and lines; posterior plates, each with a somewhat acute prominence; vertebral plates six, lateral ones five; posterior marginal scuta deeply serrated; anterior scutum elongated, transverse: *superior mandible* hooked, acute: *tail* elongated, compressed, serrated.

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TRIONYX.

15. T. *ferox*, Linn. *Sternum* with two callosities; small smooth tubercles on the anterior and posterior part of the cartilaginous covering of the body: *tail* hardly longer than the extremity of the cartilaginous covering.

Observations on the species.

1. TESTUDO *polyphemus*. This is a true land tortoise, both as respects its generic characters and its habits, and is well known in the region which it inhabits, by the name of *Gopher*. It is altogether limited to the southern states, and more particularly Georgia, and the Floridas, where it prefers arid situations, and burrows deeply in the sand. On the bank of the river St. John, Mr. T. Peale and myself dug about ten feet, guided by one of their burrows, before we arrived at its termination and secured the inhabitant. The species is readily distinguished from any other, by its depressed form and the remarkable projection of the anterior plates of the sternum; and although these plates vary in their proportional degree of prominence and width in different individuals, yet they always surpass the anterior line of the superior shell; in some instances, however, they may not exceed in proportional magnitude those of the T. *coui*, Daud. The tail also offers a very remarkable character. It is so extremely short,

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thick, and obtusely convex, that at first view the animal appears to be altogether destitute of a tail properly so called. As this member does not extend to the termination of the superior shell, we may consider the *polyphemus* as the beginning of a series in which the length of the tail is estimated; the CHELONURA *serpentina* occupying the opposite extreme in this family. Referring only to the posterior member of the *polyphemus*, we might readily conclude that Linné had this species in view when he described the CISTUDO *carolina*, but the remainder of his description and more especially his reference to a figure of a monstrous or mutilated individual of the C. *clausa*, in Edwards' Natural History, page 205, is conclusive on this point. Good specimens are in the Philadelphia Museum, one of which is living.

SYNONYMES.

Gopher, BARTRAM's Travels.

TESTUDO *polyphemus*, DAUD. in SONN. BUFF. *Nat. Hist. Rept.* vol. 2, p. 256.

The TESTUDO *denticulata*, Linn. is said by several authors to be a native of Virginia, but I have not met with it, neither is it known to the inhabitants of that state; its native country must therefore be considered as doubtful.

2. EMYS *serrata*. The largest of the North American species of this genus, and closely allied to the *reticulata* and *geographica*. On the superior

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shell are generally numerous longitudinal wrinkles or elevated lines, which give it a remarkable appearance; but as these do not exist in all the specimens, we must have recourse to other markings to distinguish this species. On comparing the *serrata* with the *reticulata*, we observe, that the posterior part of the shell is more or less serrated, whilst that of the other is simple; that the jaws are denticulated, whilst those of the *reticulata* are unarmed; that many, and sometimes nearly all of the marginal scuta have a blackish subocellate spot on their inferior surface, whereas in the *reticulata* these spots are but three in number, and are confined to those scuta which are immediately above the connecting suture of the sternum. The *serrata* is frequently brought to the Philadelphia market as an article of food.

The largest specimen I have seen we obtained in East Florida; it measures about 17 inches.

SYNONYMES.

Testudo *serrata*, Daudin in Sonnini's Buff. 2. *p.* 148, *pl.* 21, *fig.* 1, 2, (the description indicates the *reticulata*.)

Testudo *rugosa*, Shaw, *Zool. v.* 3, *pt.* 1. *p.* 28, *pl.* 4. (the *serrata* of this author *p.* 51, *pl.* 9, is a different species.)

3. E. *reticularia*. This species is far less frequent than the preceding, and the only specimen I have seen belongs to the Philadelphia Museum. This specimencor responds very well with Daudin's figure.

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SYNONYMES.

TESTUDO *reticularia*, LATR. *hist. nat. des Rept.*

TESTUDO *reticulata*, DAUD. in Sonnini's BUFF. **2**, *p.* 144, *pl.* 21, *f.* 3, (his description indicates the E. *serrata*.)

4. E. *geographica*. An inhabitant of the North Western lakes and their tributaries, as well as of the waters of the Mississippi; but it is probably not found in the more northern waters which flow into the Atlantic.

SYNONYME.

TESTUDO *geographica*, LESUEUR *Journ. Acad. Nat. Sc.* vol. 1, *p.* 86, *pl.* 5.

5. E. *scabra*. Authors seem to have seen only the shell of this species as they have not noticed the colour of the skin of the animal; this colour is uniform, dark greenish-brown above, and fulvous beneath.

The *scabra* is found as far north as Maine, it is not common in Pennsylvania, but in some parts of the country it is rather abundant; and my friend Prince Charles Bonaparte informs me that in the vicinity of Bordentown, New Jersey, it occurs frequently, and is known by the name of fresh water terrapin. The shell of a specimen which he sent me, measures nine inches in length. This is certainly the largest I have seen; and the fact is the more particularly worthy of note, as the species has hitherto been stated to be only about three inches long.

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SYNONYME.

TESTUDO *scabra*, LINN. *Syst. Nat.* (not of some other authors.)

6. E. *centrata*, is the animal so well known here by the name of "Terrapin." It is held in high estimation as a delicate food, and is generally served up on the tables of our public eating houses, boiled in the shell.

The *centrata* prefers the vicinity of the sea, and is never found far in the interior of the country, or remote from brackish water.

Like the *clausa* it varies in a remarkable degree. The concentric lines of the plates of the shell are sometimes simply of a darker colour than the general surface, whilst in other specimens they resemble deep grooves sculptured into the shell.

SYNONYMES.

TESTUDO *centrata*, LATR. *hist. nat. des Rept.* DAUD. in Sonnini's BUFF. 2, *p.* 153.

TESTUDO *concentrica*, SHAW, *Zool.* 3, *pt.* 1. *p.* 43, *pl.* 9.

7. E. *picta*. One of the handsomest of all the known species of EMYS, and at the same time the most abundant of any other in the United States. They lay for hours on logs or other objects that float on, or project into the water, from whence they dive into the water on the approach of any thing that alarms them. In old specimens a suture is very visible on the anterior part of the

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sternum, concentric to the junction of the three anterior sutures as depicted on Pl. 4 of Schoepff's work. This suture is not seen in young specimens.

SYNONYMES.

TESTUDO *picta*, LINN. GMEL. *Syst. Nat.* SCHOEPF. *hist. test. p.* 23, *pl.* 4. DAUD. in SONNINI'S BUFF. 2, *p.* 164. SHAW, *Zool.* 3, *pt.* 2, *p.* 24, *pl.* 10, *fig.* 1.

8. E. *punctata.* As well as the preceding species, this is in no danger of being mistaken for any other; its markings are perfectly distinct and striking. It is also a common species, and seems to prefer clear flowing streams.

SYNONYMES.

TESTUDO *punctata*, SCHOEPFF, *hist. test. p.* 28, *pl.* 5. DAUDIN in Sonnini's BUFFON, 2, *p.* 159, *pl.* 22.

TESTUDO *guttata*, SCHNEIDER. SHAW, *Zool.* 3, *pt.* 1, *p.* 47. *pl.* 10, *f.* 2.

9. E. * *biguttata. Shell* convex, linear-oval, slightly wider behind, a little contracted each side at the middle, and with a hardly elevated dorsal carina; *plates* concentrically wrinkled, and with obsolete radiating lines; dark brown or blackish, obsoletely varied with yellow; *vertebral plates* subequal, wider than long; *costal plates*, excepting the fourth, which is small, subequal, the anterior one somewhat largest; *marginal scuta* twenty-five, anterior one linear, its length equal to double its breadth: *sternum* blackish, varied with yellow and

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with twelve plates, of which the two anterior ones are smallest, triangular, with rectilinear sutures; lateral angles a little prominent, and at their anterior junction somewhat emarginate; second and third pairs of plates subequal; fourth and fifth larger, subequal; sixth much smaller, broader than long, widely emarginate behind: *head* blackish, varied with yellow in short undulated lines, particularly on the inferior jaw, which is much curved upward at tip and acute: superior jaw deeply emarginate at tip, each side of which is a slight obtuse dentiform prominence: *occiput* with two very large, bright, fulvous spots: *tail* as long as the hind feet, thick at base, and gradually tapering to the tip, which is unarmed.

Length of the shell, three inches and four-fifths; greatest breadth nearly two inches and four-fifths; breadth in the middle, two inches and two-fifths.

This new species is by no means common; I have as yet seen but few individuals, one of which is in the collection of the Academy.

10. E. *glutinata.* This species has not yet fallen under my observation, and we have no other information respecting it than what is recorded by Daudin. He informs us that it is so closely allied to the *odorata* as to be with difficulty distinguished from that species, by any other character than that of the immoveable condition of the extremities of the sternum, which, in the *odorata*, are valvular. Whether or not immobility of the sternum

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may be the consequence of advanced age, or a permanent specific trait, must be left for future determination.

SYNONYMES.

TESTUDO *glutinata*, DAUDIN in SONNINI'S BUFFON, 2 *p.* 194, *pl.* 24, *f.* 4, (the sternum.)

TESTUDO *pensylvanica, sterno immobili.* SCHOEPFF, *pl.* 24, *fig.* B, *p.* 110.

11. CISTUDO *clausa.* Familiarly known to almost every one by the name of land tortoise; it is that species on the inferior shell of which many persons are in the habit of cutting the initials of their names together with the date of the year.

It exhibits so great a variety in the form, number, and distinctness of the yellow spots in different individuals, that it is not common to find two in which these markings are nearly similar. Amongst the varieties, there appears to be every degree of gradation from large spots occupying a greater portion of the whole surface of the superior shell, to obsolete spots, or to small ones covering but a very small portion of the surface; some specimens have been found altogether immaculate. Moreover, as in the E. *concentrica*, the plates are sometimes sculptured with impressed concentric lines; in other specimens they are perfectly glabrous, and between these two extremes a complete connexion may be traced. So great is the variation in these respects, that it appears to me

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necessary to have some other character than colour, pointed out on the E. *virgulata* of Daudin, in order to prove it a species and not a mere variety of the *clausa*, as I believe it to be, as well as the E. *carolina* of Linné.

This species certainly belongs to the genus EMYS, as formerly characterized, although it does not, at least as far as I have observed, ever enter the water voluntarily, and is therefore as exclusively a land tortoise as the TESTUDO *polyphemus* itself. The *clausa* does, however, exhibit a predilection for moisture, as Mr. Titian Peale has observed, by exposing itself to every fall of rain, whilst its companion in the same enclosure, the *polyphemus*, invariably seeks shelter under the same circumstances.

A very beautiful variety occurs on the arid prairies of the Arkansa. A specimen brought by Major Long's exploring party is in the collection of the Philadelphia Museum; the yellow lines and spots on its shell are unusually vivid and well defined, contrasting strongly with the general black colour: the sternum is also black brown, with numerous bright yellow lines. If the *virgulata* be justly entitled to specific distinction, this variety, and in fact several others, must also be separated.

SYNONYMES.

TESTUDO *clausa*, LINN. GMEL. SCHOEPFF. *Hist. test. p.* 32, *pl.* 7. DAUDIN in SONNINI'S BUFFON, *Reptiles*, vol. 2, *p.* 207,

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pl. 23, *fig.* 1, 2. SHAW, *Gen. Zool.* vol. 3, *pt.* 1, *p.* 36, *pl.* 7. (the figure taken from Edwards'.)

TESTUDO *carolina*, LINN. GMEL.

TESTUDO *caroliniana*, SCHNEID. SCHILD. *p.* 334.

TESTUDO *tessellata*, *minor caroliniana*, EDW. *nat. hist. p.* 205.

La courte queue, LACEP. *hist. nat. Quad. ovip.* vol. 1, *p.* 169.

TESTUDO *virgulata*, DAUDIN in SONNINI'S BUFF. *Reptiles*, vol. 2, *p.* 201, *pl.* 23, *f.* 3, 4.

12. C. *pensylvanica*. Inhabits ditches and other turbid waters. It is sometimes taken by the hook and line. A variety was found by a detachment of major Long's exploring party on Bowyer creek, a tributary of the Missouri. The upper shell is altogether similar to that of specimens found in the vicinity of this city, but the sternum is proportionally much wider; the femoral plates are much more elongated backward, and the junction of the caudal plates is but very slightly emarginated at tip.

SYNONYMES.

TESTUDO *pensylvanica*, LINN. GMEL. SCHOEPFF, *p.* 107. t. 24. SHAW, *Zool.* vol. 3. *pt.* 1, *p.* 60, *pt.* 14, *f.* 2. (the shell he figures as a variety on *pl.* 15, is a distinct species, and probably not of this country.) *Enc. Meth. pl.* 5, *fig.* 1. Daudin in Sonnini's Buffon, 2, *p.* 182, *pl.* 24, *fig.* 1, 2.

13. C. *odorata*. With the general appearance and form of the *pensylvanica*, this is certainly a perfectly distinct species. Daudin, who separated

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it, has given a very good figure in Sonnini's Ed. of Buffon. Waving other equal or more important differences, the form of the apex of the upper mandible, is alone sufficient to show that the *odorata* is entitled to rank as a species. In the *pensylvanica* this part is rather abruptly prolonged vertically, so as to conceal much of the tip of the inferior mandible, as in the *clausa*, CHELONURA *serpentina*, &c. whereas in the present species the upper mandible is not at all prolonged, but the tip is perfectly simple and rounded.

The *odorata* is generally known by the name of "stink-pot," from its musky odor; it is a very common inhabitant of ditches and other turbid waters, and is very troublesome to those who angle in such situations. Some persons are so well acquainted with its nibble, as to be able to distinguish it from that of the various kinds of fishes. It affects the hook in a sluggish manner, and sometimes remains firmly attached for a considerable interval, without giving any motion to the cork which floats on the surface.

SYNONYMES.

TESTUDO *odorata*, DAUD. in SONN. BUFF. 2, *p.* 189, *pl.* 24, *f.* 3, (sternum.) he quotes LATR. *hist. nat. des Rept.* 1, *p.* 122.

14. CHELONURA *serpentina*. A common species, inhabiting large muddy ponds, ditches, and other waters of slow current. In winter it approaches holes in the ice, and is then taken by the harpoon, for culinary purposes. It is exposed for sale in

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our markets under the name of "snapping tortle." It is prevented from biting by a piece of twine which is passed between the jaws and drawn tight around the sides of the body. It constitutes the chief ingredient of the more common kind of "turtle soup" of our taverns and oyster cellars.

Mr. J. E. Calhoun informs me that it is distinguished by the negroes of South Carolina, by the name of *Coutta*, probably from its similarity to an unknown species of Africa.

In some situations where this species abounds, it is very destructive to young ducks, seizing them by the feet and dragging them under water, for the purpose of devouring them.

SYNONYMES.

TESTUDO *serpentina*, LINN. GMEL. *Syst. nat.* SCHOEPFF, *hist. test. p.* 32, *pl.* 6, DAUDIN in Sonnini's BUFFON, 2, *p.* 98, *f.*

TESTUDO *serrata*, PENN. *Arct. Zool. suppl. p.* 97.

15. TRIONYX *ferox*. An inhabitant not only of the rivers of Carolina and Georgia, as stated by authors, but it is found in nearly all the tributaries of the Mississippi, abundant in the Ohio, and of frequent occurrence in the smaller streams that discharge into the Missouri. It is also found in the streams that flow into the Lakes, and Dr. Dekay informs me, that it is found in the state of New-York, inhabiting some of the tributaries of Hudson's river. Its flesh is esteemed a nutricious and very delicate food; it is brought to the market of Pittsburg from June to December. Mr.

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Speakman informs me that he has kept individuals upwards of a year, and that although they were very active, yet, with the exception of young ones, he never knew them to attempt to bite. They are chiefly taken with the hook and line, and are known by the name of "soft shelled turtle."

Although this species has been called by the several names of *ferox*, *La molle*, and *Tortue de Pennant*, yet Mr. Geoffroy has thought proper to apply another name, (v. Ann. du Mus. vol. 14, p. 17.) In a note on page 12, of the same volume, that distinguished naturalist observes, that as he has not seen the shells of the T. *ferox* and *euphraticus*, his figure 2, pl. 5, may represent that of one of those species, but he is of the opinion that it does not, because the shells of those two species are described to be more convex. In this opinion Mr. Geoffroy appears to me to be perfectly correct; the shell of the *ferox*, belonging to the collection of the Philadelphia Museum, though probably not more convex than that of the *subplanus*, is yet of a different form, from that of his figure, being longer in proportion to its width, and the ends of the ribs project further beyond the circumference of the shell.

SYNONYMES.

Testudo *ferox*, Linn. Gmel. *Syst. nat.* Pennant *Philos. Trans. Lond.* vol. 61, *p.* 266, *pl.* 10. Daudin in Sonnini's Buffon, 2 *p.* 69.

La Molle Lacep. *hist. nat. des Quadr. ovip.* vol. 1, *p.* 137, *pl.* 7. *Ency. Meth. pl.* 5, *f.* 3.

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Observations on the ZINC ORES *of Franklin and Sterling, Sussex County, New Jersey. By* G. TROOST, M. D. *Read September* 7, 1824.

The facts collected in this memoir have been observed nearly two years past. I made these researches merely for my own use, being in some measure, prevented from publishing them by Messrs. Vanuxem and Keating announcing their intention of publishing a description of the minerals of Franklin, of which they gave a list. As this promise is at last partly fulfilled in a memoir read June 1st, and published in Part I, of this volume, I feel myself at liberty to present my observations.

The mineral which I first subjected to examination was the siliceous oxide of zinc. This substance particularly fixed my attention on account of its singular appearance, deviating much from the varieties of that ore with which I was acquainted, having apparently undergone a partial fusion by which the surface of the crystals have become rough, offering waving or undulating faces and rounded edges, which renders it difficult to determine the inclination of the different angles; while crystals of other minerals in the same situation, and as easily decomposable as the zinc ore, present sharp edges and level polished surfaces;

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from which it appears probable that the roughness and bluntness of these angles is not owing to a partial dissolution, but to some other causes that we are unacquainted with.

I succeeded with some difficulty in extracting by mechanical division, the primitive form, and found that its cleavage was three-fold, forming a straight four-sided prism, with a square base or cube. This was an unexpected discovery, differing also in this respect from the European mineral, as the primitive form, as stated by Haüy, is a rectangular octaedron, while De Bournon gives a rectangular tetraedral prism. I am not acquainted with the observations of De Bournon on those minerals which are published in his catalogue, where he describes twenty-two varieties of forms. I do not know if that philosopher has actually succeeded in extracting by mechanical division, the tetraedral prism, or if it was the result of calculation, but as to Haüy, it appears from his writings, that he obtained a very small solid, the faces of which did not exceed one millimetre. The accuracy, nevertheless, of this distinguished philosopher is such, that even with his insignificant means we may rely on his assertions, and might therefore be induced to believe that our mineral was not the same as that described by Haüy—this appears the more surprising as its chemical composition coincides pretty well with the European. Could a small proportion of manganese,

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which the mineral in question contains, possess so much influence as to change entirely the arrangement and form of the integral parts?

As to the discovery and determination of the primitive form above mentioned, I believe it to be beyond the reach of doubt. I have several times succeeded in extracting this solid, and have in my collection a fragment of a large crystal, offering a surface of upwards of three inches, which presents on one side the perfect cleavage. Whence it follows that the primitive form of our mineral is a straight rectangular four-sided prism, with a square base, or a cube.

The secondary forms are not numerous, the dodecaedron, the most common form in which it occurs, is generally lengthened in such direction as to form a six-sided prism, surmounted by a pyramid with three faces, the faces of the prism being six oblique-angled parallelograms, while those of the summit are rhomboidal; these faces are joined together under angles of 120°, and if true over the whole crystal, they would be the result of the most simple law of decrement, that is, by one row of molecules parallel to the edges of the cube; but the edges and faces of the pyramids are often imperfect, and it is rare that more than one face has preserved its shape and offers a good edge where it is joined with the prism: the other faces present only the shape of rhomboidal planes,

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which do not admit of measurement; the angles of the perfect faces have constantly given me 120°.

If these angles were not of that value the primitive form would not be a cube, but a parallelopipedon, whose sides would stand in a different ratio to each other than those of the cube, which does not appear to be the case. This is farther corroborated by the following form.

It crystallizes also in a flat six-sided prism, surmounted by a diedral summit, with pentagonal faces resting on the lateral edges of the prism, the edge of which forms an angle with the pentagonal face of the summit of 135°, and must also be the result of a decrement of one single row of molecules, as in the dodecaedron, but it does not exist on all the sides of the cube, being only at the bases and two of the sides; the crystal being at the same time elongated, its form must be as I have stated, a hexaedral prism, four of the faces being oblique-angled parallelograms and two hexagons; the two terminal faces pentagons resting on the lateral edges of the prism, with which they form an angle of 135°. This circumstance is also in favour of the primitive form being a cube; the angles of the prism are two of 120°, and four of 135°. The value of these angles nevertheless are not absolutely determined, the crystals being much bent and the edges of the sides very convex. I found amongst my crystals some indications of more complicated forms, but from the before mentioned

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roughness of faces and convexity of edges, I was not able to determine their true form.

We see therefore that the secondary as well as the primitive forms differ from those given by Haüy, of the zinc oxide silicifere, and that it ought to be considered as a different substance; but chemical composition does not permit this separation, as its constituents coincide with those of Klaproth, Pelletier, Smithson, Bertier, John, and Berzelius, except that our ore contains upwards of 5 per Ct. of oxide of manganese, which ingredient influences its colour but cannot be supposed to influence its crystalline form, and renders it therefore probable that the nature of the siliceous oxide of zinc is not perfectly understood.

Its specific gravity is 3.98 to 4.15; the latter was the result of Mr. W. Hembel, jr. the first by myself, which coincides nearly with those given by Messrs. Vanuxem and Keating. In this respect it differs from the European varieties, which are quoted from 3.30 to 3.52.

The colour of the mineral is from gray passing through every shade to black, also pale greenish-yellow, and the different shades of rose and peach blossom-red, which colours are probably owing to the different degrees of oxidation and quantities of the manganese, the exterior of the masses or crystals being generally black while the interior part is red.

It occurs also in amorphous masses, and in that

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case it contains the red oxide of zinc in the form of small nests, and then generally presents a more foliated structure than when it is associated with the granular franklinite. The crystals are generally irregularly clustered together, intermixed with garnet, franklinite, sometimes crystallized in emarginated octaedrons and ferruginous carbonate of lime, and frequently forms the support of the octaedral crystals, called by Messrs. Keating and Vanuxem, dysluite.

RED OXIDE OF ZINC. While engaged in the investigation of the siliceous oxide of zinc, I also examined the red oxide of zinc, (which is so much blended with the previously described mineral,) and succeeded in extracting from the same, the primitive form, which is a straight rhomboidal prism whose angles are 100° and 80°. I did not find any cleavage in the direction of the diagonals. The solid which I obtained was upwards of three eighths of an inch, the sides smooth and well calculated to be measured. This form does not agree with that mentioned by *Mohs*, who states that it is divisible parallel to a rhomboidal prism, the angles of which are upwards of 120°. We rarely meet specimens which are distinctly foliated and fit for mechanical division; it is probable that *Mohs* operated on specimens which were not well calculated for cleavage. We thus see that the primitive form and chemical composition separate this mineral from the siliceous oxide of zinc, with

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which it is ranked by Haüy, and described in an appendix under the name of *zinc oxide ferrifere lamellaire brun rougeatre.* Haüy Traité de Mineralogie tom. 4, p. 179, 2d ed.

Comparing what I have stated in regard to the siliceous oxide of zinc, with that published in the memoir on the minerals of Franklin, by Messrs. Vanuxem and Keating, (page 3 of this vol.) the Academy will perceive that our researches have produced different results; I therefore submit this memoir to our mineralogists, and wish some other would undertake the examination of these minerals with the view of establishing the correctness or fallacy of my investigations.

The following are the particulars in which my observations differ from those of the gentlemen before mentioned.

Messrs. Vanuxem and Keating say, page 8, "The form of the crystals is an hexagonal prism with triedral terminations, the faces of which repose upon the lateral edges of the prism are 120°, and of the faces of the pyramid with one another about 118° (?) being the regular hexagonal prism with a *rhomboidal* summit, of course leading to a *rhombohedron for the primitive form.*" A few lines further it is said "that from circumstances of the edges and faces being convex they cannot positively affirm that the terminal faces are those of a *rhombohedron.* The gentlemen do not state how they deduce from the above described form

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a *rhombohedron* for the primitive form which deviates so much from the one I obtained by mechanical division, nor are the relative dimensions of this rhombohedron given by them.

The authors mentioned commence their memoir with "JEFFERSONITE," and admit its identity with pyroxene; therefore the name given by them to this substance is inadmissible, and must henceforth be relinquished. But they wish to make it appear that the cleavage is an anomaly, and that heretofore the cleavage parallel to the faces of the primitive form have invariably been the smoothest, &c. I doubt very much this being the case. Most of the varieties of pyroxene we have in our country are more easily divisible parallel to the bases forming smooth faces than in any other direction, and this division is generally indicated by the transverse rents forming with one of the sides an angle of 106°; this circumstance offers a striking character to distinguish this mineral from others with which it has some analogy. I believe it is the pyroxene augite alone which appears to make an exception to the general rule. In the diopside or mussite, we perceive the transversal rents indicating a cleavage; it is the same with the varieties malacolite, or sahlite, pyrgom, fassaite, and baikalite; in these, the cleavage, easiest to obtain, is parallel to the base, and the foliated structure is in the same direction. To this variety belongs the PYROXENE of Franklin, the sub-

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stance under consideration, it being foliated, particularly in the direction of the base, which circumstance is a distinctive character of this variety, having also, when not acted upon by the atmosphere, a dark green colour.

When we find a lamellar structure in the pyroxene coccolite, it is in the direction of the base. This is the case with nearly all the varieties of pyroxene in Europe, (handbuch der oryktognone von Karl Caesar von Leonnard, page 523) as well as the pyroxene of our country, as those of Easton, Penn. Orange county, New York, Rodger's Rock, &c. which belong to the variety malacolite or sahlite, the surface of the lammina forming an angle of 106° with one of the sides is smooth: it is also the case with the white pyroxene and coccolite of King's Bridge, New-York, the pyroxene of Compton Hill, New Jersey; in fact with all the pyroxene of our country which I have had an opportunity of examining. The resplendent pyroxene of the Brandywine Creek, Delaware, seems to be an exception, which, according to Mr. Vanuxem, is more easily divisible parallel to one of the diagonals, and the pyroxene augite, of which the transverse fracture is rough; and I believe that Haüy alluded to this variety when he says "*cassure; transversale, raboteuse.*"

Having admitted the identity with pyroxene from its crystalline form, they nevertheless create doubts concerning the composition of this min-

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eral as given by Mr. Henry Seybert. From the analysis of this substance by that gentleman, it is evident that its components are *bisilicates*, and not *trisilicates*, as is stated by Mr. Keating. (Vol. ii. page 200 of this Journal.) Mr. Keating still lays much stress on its containing more or less of magnesia, and implies that it is doubtful whether the minerals analyzed by Rose were really pyroxenes; and he farther implies, that we can put more confidence in the analysis made in the garden of plants at Paris, *as it were under the eye of Haüy.* I would not doubt that the substances analyzed by Vanquelin and Laugier, were true pyroxenes, though they had not been examined *under the eye of Haüy;* but why should we question the accuracy of the analysis of Rose? is it because they did not yield much magnesia? We know that Klaproth reports an analysis of a variety of pyroxene from Sicily, in which he found only 1.75 of magnesia, and that Roux's analysis of a variety from Arendal, afforded none whatever; nor does it appear from the memoir published by Mr. Seybert, (American Journal of Science and the Arts, vol. vii. p. 145,) that he considered the magnesia which he found in the pyroxene from Franklin, an *essential* constituent, though he obtained 4.00 of it, but that the important difference in Mr. Keating's analysis and his, had reference to the proportion of silica, by which the true character of this mineral was determined. Mr.

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Keating may also be sure that the mineral examined by Mr. Seybert, was precisely the same substance as that described by him under the name of Jeffersonite. We may add further that the analyses of Rose are cited by the most distinguished mineralogists and chemists in Europe; and we cannot doubt that he was well acquainted with all the distinctive characters of pyroxene, since the results of his analysis (at least those with which I am acquainted) show that he did operate on the true pyroxenes; and if an eye-witness is required, we have one in the celebrated Berzelius, in whose laboratory Rose made his experiments. "M. Rose, en comparant ensemble plusieurs sortes de pyroxenes a fait voir que tous sont des *bisilicates* de quelques unes des quatre bases isomorphes conformement au systeme de Mitscherlich savoir, la chaux, la magnesie, le fer oxidule, le manganese oxidule, ici c'est un bisilicate de manganese oxidule, et de chaux la un bisilicate de chaux et de fer oxidule. Ansi disparaissent, graces aux decouvertes de M. Mitscherlich les contradictions qui existerent entre les resultats des analyses chimiques et la caractere fonde sur la forme des crystaux." (Berzelius. Reports annueles de l'academie royale des Sciences de Stockholm, 1822.)

RED OXIDE OF ZINC. Messrs. Vanuxem and Keating say, that the name of *red oxide of zinc*, given to it by its discoverer, the late Professor Bruce of New

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York, is improper, and they call it *red zinc ore.* This name may be applied with as much propriety to the siliceous oxide of zinc, as to the mineral under examination, both are zinc ores and have a red colour. The mineral discovered by Professor Bruce, contains, according to his analysis, 9.20 of oxide of zinc, and 8.00 of oxide of manganese and iron; according to Bertier, it is composed of 98.0 of oxide of zinc, and 12. of manganese; these being its constituents, I see no reason why the name of *red oxide of zinc* proposed by the discoverer, is improper; the small quantity of oxide of manganese which is chemically combined with it, does not authorize the alteration of a name, besides, the most distinguished mineralogists have adopted Bruce's name of *red oxide;* and Haüy, well aware of its combination with a quantity of oxide of manganese, says, (Traite de Mineralogie Tom. 4, page 177, 2d ed.) "La variete, des etats unis formera un espece apart, et devrait etre consideree comme la veritable oxide de zinc."

I suppose Messrs. Vanuxem and Keating did not examine the cleavage of the red oxide of zinc, or they would have discovered that Mohs is in error in regard to its cleavage, and would not have copied him.

CARBONATE OF ZINC. This mineral in addition to the forms mentioned by Messrs. Vanuxem and Keating, occurs also in mammillary concretions.

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Notice of the PLESIOSAURUS, *and other Fossil Reliquiæ, from the State of New Jersey. By* RICHARD HARLAN, M. D. *Read September* 7, 1824.

I have lately received from Mr. I. Lukens, a collection of fossil teeth and bones, which were discovered at Mullica Hills, New Jersey; among which are three vertebræ belonging to some *saurien* reptile, unlike any hitherto described, and the *type* of which is not known to have existed in North America.

One only of these vertebræ retains sufficient characters to enable me to determine the extinct genus to which it belongs. This specimen, Pl. xiv. fig. 1. is a dorsal vertebra completely petrified, or rather impregnated with iron; it is perfect with the exception of the greater portion of the spinous process, which has been broken off since the petrifaction of the bone.

The following are its dimensions; transverse diameter of the body, 1 inch seven-tenths; vertical diameter of the same, 1. 4; length of the side, 2. 2; length of the transverse process, 1. 4.

This vertebra is similar to those of the genus PLESIOSAURUS, in being slightly concave at both extremities, and again, slightly swelled in a contrasted curve near the middle of the circular area. All

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the fossil *crocodiles* have this in the *posterior* part of the column.

It further corresponds with the PLESIOSAURIEN vertebræ in having the ribs articulated by a single tubercle, to the end of the transverse process, the articulating face of which is oblong horizontally; this structure is observed in the crocodiles in the three last vertebra only. The specimen under examination, however, differs from any species of the PLESIOSAURUS hitherto described, both in *magnitude* and *proportion*, as is demonstrated in the following measurements of the vertebræ of that animal, described by Messrs. Conybeare and De la Beche.

"The proportion of the diameter to the length of the side, is nearly as 5 to 4, in the cervicals; in the middle dorsal, a little greater, and in the caudal, nearly double.

In the crocodile the diameter is always less than the side. A middle dorsal vertebra from Col. Bird's specimen of PLESIOSAURUS, measured one inch and a half through the articulating surface; length of the side, one inch and one-eighth; though one specimen has been latterly discovered, measuring three inches in diameter."*

The form of the occipital and caudal surfaces of the body of the *vertebra*, which is the subject of the present essay, distinguish it from the fol-

* Vide Geological transactions, vol. v. Part II.

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lowing animals, viz. The Maestricht animal, Crocodiles, Monitors, Iguanos, and in general the most part of the Sauriens and Ophidiens, in which the bodies are concave before, and convex behind. In the Cetacea the bodies are nearly plain, and in fishes they are concave conically on both surfaces.

Cuvier remarks,* "the dorsal vertebræ of the *Maestricht* animal have their transverse apophyses short, and terminated by an articulating surface enlarged vertically, which carries the rib, which is consequently attached by a single head: this characterizes the *Monitors* and most of the *Sauriens, excepting only the crocodiles*, in which particularly, this structure is absent, with the exception of the three last ribs."

To the crocodiles, as an exception, Cuvier should have added the Icthyosaurus, Iguana, and Camelion, among the *Sauriens*, together with the Crotalus and Coluber, among the *Ophidia;* in all of which, the ribs are articulated with the bodies of the vertebræ by two tubercles, but do not unite with the *transverse process as in the crocodile.*

Conceiving it highly important to the science of Oryctology to ascertain correctly the manner in which the ribs of the different genera of the Saurien family are articulated, I solicited and obtained permission from the Academy of Natural Sciences, to examine the very valuable collection

* Anim. fossil, vol. iv.

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of this branch of Zoology contained in their cabinet. As far as my examination extended, (with the exception of those genera above noticed, in which the ribs are articulated to the bodies,) the *transverse* processes (or a tubercle which supplies their places,) receive the head of the ribs, as in the following genera; viz. the PLESIOSAURUS, MAESTRICHT ANIMAL, CALOTES, MONITOR, AMEIVA, SCINCUS, GECKO, AGAMA, ANOLIS; also the SIRENA, the TRITON, and the SALAMANDRA, among the BATRACHIA.

Figures 2, 3, and 4, represent different views of a *fossil mineralized tooth*, from the New Jersey "Marle Pits," three miles from Woodbury, belonging to the Cabinet of the Academy. This tooth, from the mode of dentition, evidently belonged to a *Saurien* reptile; it is figured of its natural size, two inches and four-tenths in length, though about one-fourth of an inch has been broken off the point. It is considerably curved inward, and slightly curved backward at its point; the dermal aspect is doubly convex, the mesial aspect presents a surface slightly concave, vertically; terminated by a sharp finely serrated edge anteriorly and posteriorly; the diameter of the base is one inch and four-tenths. This tooth resembles in every respect those teeth of the *Maestricht Monitor*, which lie buried in the maxillæ, and which are to take the place of the first series, when the latter are broken off or destroyed.

The Cabinet of the Academy and Philadelphia Museum contain numerous specimens of Shark's

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teeth from New Jersey, most of which are impregnated with iron, and are in a perfect state of preservation. From the present imperfect state of our knowledge of this department of Zoology, and from the proteiform variety presented by the teeth of the same individual, it is almost impossible to refer them with certainty to the present existing genera; by referring to figures 5th, 6th, and 7th, the truth of this observation will be sufficiently obvious; they represent teeth taken from the upper and lower jaw of three existing species, the jaws of which are in the possession of Mr. C. A. Lesueur: however, specimens from New Jersey have been discovered, which resemble closely the following sharks, viz. *Squalus zygena*, *mustelus*, *cinereus*, *squatina*, and the *carcharias*, two specimens of which measure five inches long, and four broad at base. If the same proportions existed between the body and the teeth of the recent and fossil-carcharias, the latter must have been more than forty feet in length. In vol. iii. of Parkinson's Organic Remains, are good figures of the teeth of most of the above named genera.

There is also deposited in the Cabinet of the Academy, from the western shore of Maryland, a cervical and a caudal vertebra of a gigantic species of fossil Manatus; the vertical diameter of the former is nine inches and a half; the transverse diameter eleven inches. A fossil rib of the Manatus, was also discovered by Mr. Finch, at the same locality.

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Descriptions of three new species of COLUBER, *inhabiting the United States. By* THOMAS SAY. *Read, January* 25, 1825.

COLUBER.

1. C. *amœnus.* Above brown or blackish; beneath, bright red; tail short, with an abrupt solid conic tip.

Inhabits Pennsylvania.

Body above reddish brown, beneath vivid red: *head* not larger than the neck, obtusely rounded before; terminal plate curving a little on the top of the head, so as to be nearly horizontal above; first pair of plates rather short, breadth decidedly more than double the length; second pair rather large, oblique, posterior outer angle reaching the eyes; central plate convex, rounded-subtriangular, wide before and angulated on the anterior middle, posterior angle acute; posterior plates a little convex, with a single scale between their tips; eyes with one scale behind, one before twice as long as the posterior one, small plate above the eye less than half the length of the central plate, and not twice as large as the posterior eye plate: *teeth* minute: *scales* smooth, polished, somewhat opalescent, slightly convex, rounded at tip: *tail* less

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than one-seventh the whole length; tip rather abrupt, conic, solid, acute.

Plates 124. sc. 25. Total length, 10 inches and three-tenths; tail 1 inch and two-fifths.

Var. a. dark slate colour above.

A very pretty and perfectly harmless serpent. The contrast of colour between the lively red, sometimes rosaceous, of the inferior surface of the body, and the brown, more or less deep, of the superior surface, is very striking; the abrupt termination of the tail and the narrow head, are also distinguishing traits. It is found beneath stones and prostrate logs, but not very frequently.

The following are the respective dimensions and number of double scales and plates of four specimens belonging to the Philadelphia Museum.

Pl. 125, sc. 38. Total length, 8 inches and a half; tail more than 1 inch and five-eighths.

Pl. 134, sc. 28. Total length, 10 inches and three-eighths; tail nearly 1 inch and a half.

Pl. 126, sc. 24. Total length, 10 inches and seven-eighths; tail 1 inch and three-eighths.

Pl. 134, sc. 32. Total length, 4 inches and five-eighths; tail five-eighths of an inch.

A specimen in Mr. W. L. Stewart's collection has Plates 118, sc. 35, it is nine inches and three-fifths long, with the tail of more than one inch and four-fifths. But in all these variations the small size of the head, the form of its plates, and their number about the eye, remain the same.

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2. C. *rigidus.* Dark fuscous or blackish; beneath yellow, with two black lines.

Inhabits the southern states.

Body very dark greenish-brown above: *head* very little wider than the neck; second pair of plates transverse, posterior lateral angle not extended to the eye; central plate with the length nearly twice its breadth; super-ocular plate, length more than twice its greatest breadth, and more than two-thirds the length of the central plate; posterior plates without any scale between their tips, but each terminating in a scale; lip-plates and chin reddish-brown: *eyes* in contact with two transversely-oblong small plates behind, and two before, of which the inferior one is smaller: *scales* oblong, emarginated at tip, and with an elevated line, obsolete on the lateral scales and wanting on the three inferior series; scales of the two inferior series entire at tip, pale, castaneous at base; stria of the tail more distinct and the scales somewhat elevated at their tips: *beneath* yellow, with two perfectly regular black lines, confluent on the neck, situated near the middle, nearer to each other than to the first series of scales, formed of slender, elongate-triangular spots, and terminating at the vent: *tail* attenuated, double scales beneath margined with blackish.

Plates 133, sc. 51. Total length, 20 inches and three fifths, of the tail, 4 inches.

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This species frequents the water, and has considerable resemblance to the *porcatus*, Daudin, (*aquaticus*, Shaw,) who seems to have confounded two species together under that name as varieties. But his true species differs from the present, by many well marked characters. All the scales have elevated lines, not excepting even the inferior series; the labial plates are margined with brown; the eyes have three small plates behind, and but one before; the inferior part of the body is variegated, and the proportion of the plates and double scales is different. It is also allied to the *erythrogaster*. The specimen is in the cabinet of the Academy.

3. C. *septemvittatus*. Brownish, with three blackish lines; beneath yellow, with four blackish lines.

Inhabits Pennsylvania.

Body cinereous-brown above: *head* a little wider than the neck; second pair of plates transverse, posterior lateral angle not extended to the eye; central plate with the length nearly twice its breadth; superocular plate in length twice its greatest breadth, and nearly as long as the central plate: *eyes* in contact with two subquadrate, small plates behind, and two before, of which the inferior one is smaller; posterior plates somewhat truncate, or rounded at tip; lip plates yellow: *scales* oblong emarginated at tip, and with an elevated line on all; a blackish line occupies the

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vertebral series and a portion of the contiguous series, and a similar equal line occupies the fifth and a part of the fourth series on each side; a blackish somewhat broader line occupies one half of the breadth of the ninth series of scales, and the ends of the scutæ, extending to the tip of the tail; a yellow line is on the remaining half of the ninth series, and includes nearly all of the eighth series, extending also to the tip of the tail: *beneath* yellow, with two perfectly regular blackish lines, confluent on the neck, situated each side of the middle, formed of quadrate spots, and terminating at the vent.

Plates 143, sc. 70, of another specimen, Plates 142, sc. 73. Total length, 9 inches and nine-tenths, of the tail 2 inches and a half.

An individual of this species was found by Mr. Reuben Haines, on the second floor of his residence at Germantown, and another was caught near Philadelphia, by Thomas M'Euen, M. D. They are perfectly alike in their markings, and belong to the collection of the Academy. A specimen belonging to the cabinet of Mr. William Hyde, is much larger than those above mentioned, and may probably have reached the maximum size; it measures twenty-two inches and nine-tenths in total length, and the tail is six inches and three-tenths long; the plates are a hundred and forty-four, and scales eighty.

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Description of two Species of Linnæan LACERTA, *not before described, and construction of the new genus* CYCLURA. *By* RICHARD HARLAN, M. D. *Read November* 30, 1824.

Species 1*st.* This animal was brought from Turk's Island, and presented to the Museum immediately after its death. The colour of the skin is of a dirty deep brown; in general, the form of the head resembles that of the Iguana, but the scales on the top of the head and end of the snout are of much smaller size; their form being pentagonal, a series of corneous scales line the infra-orbitar ridge. Neck, breast, and body, clothed with uniform fine smooth scales, of a square form, and slightly imbricate.

Skin of the inferior portion of the neck, loose, and folded transversely: *scales* upon the top of the back elevated and compressed into long, slightly recurved, flexible spines, forming a crest, or fringe, extending from the occiput to the base of the tail; this fringe is wanting where the neck moves on the body, leaving a smooth space half an inch in length, between the scapulæ; the same is to be observed at the setting on of the tail: *scales* on the thigh, smooth; those on the leg and front of the foot, bristled over with minute sharp spines pointing downwards. A series of pores,

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twenty in number, line the inner part of each thigh : *tail* verticillate, circular at its base, slightly compressed at its upper part in the middle; becoming again cylindrical at the extremity, where it ceases to be verticillate; carinated above, by thick and sharp spines, pointing backwards, and terminating four inches from the end of the tail; the remaining portion being clothed only with equal elongated carinate scales; the spinous bands are twenty in number, extending rather more than two thirds around the tail, leaving a smooth surface beneath. They consist of thick oblong scales, with an elevated carina or an obtusely angular spine projecting backwards from their centre; these bands are separated from each other by a circular series of smaller scales depressed and imbricate, becoming carinate towards the extremity, generally three rows in number, becoming more numerous beneath: *claws* resemble those of the Iguana.

Anatomy. Tongue fleshy, extensible, and partially slit, or rather indented at its apex: *teeth* resembling the Iguana's in form and mode of articulation; twenty-five in number on each side of both jaws: *palate* destitute of teeth; trachea lies exposed on the floor of the œsophagus, which is enormously large; the opening into the trachea is furnished with a complete epiglottis, in which respect it is more perfect than the Iguana, in which this organ is incomplete; os hyoides has

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two cornua on each side, and a bifid one in the middle, reaching downwards to the loose skin of the throat; the intestine, a few inches above the cloaca, is dilated into a sack or pouch, with thick parietes: *urinary bladder* large, and opens with the fallopian tubes into the cloaca: *anus*, a transverse slit.

CIRCULATORY SYSTEM. I was desirous of comparing the structure of the heart with that organ in the crocodile, which is very unlike the heart of the *Turtles* to which Cuvier has compared it, *(Lec. d'Anat. Comp.)* As no correct description of the anatomical structure of the heart in the *Saurien* reptiles has ever been given to the public, I shall offer a brief outline of the organs of circulation in the "CROCODILUS *lucius*," which will serve as a type for all the LACERTA. To Mr. N. M. Hentz, the credit is due of having first detected this peculiarity of structure in the heart of the crocodile. His essay on this subject will shortly appear in the *Trans. of the Am. Phil. Soc.*

I abstract the following observations from my notes of a dissection of an alligator, which I performed for the fourth time in January, 1824.

1*st*, I forced air into the vena cava ascendens, which injected the right auricle and ventricle, and passed into the lungs through the pulmonary artery; into the splanchnic aorta; also into the systemic aorta through the valvular opening at

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its base; the blood in both superior cavæ regurgitated.

2*d*, I forced air into one of the pulmonary veins, which inflated the left auricle and ventricle, passed into the systemic aorta, and the subclavian trunks which leave the super-cordal sacks, (each of the large arteries are dilated immediately on leaving the heart, and are so united as to appear externally as a single sac.)

The circulation in these animals is briefly as follows:—1st, the blood passes from the right auricle into the ventricle of the same side; in this cavity there are four openings, 1st, one leading from the auricle; 2d, one into the pulmonary artery; 3d, one into the splanchnic aorta, carrying black blood to the viscera; and 4th, one into the systemic aorta, by the valvular communication at its base, which allows the continuation of the circulation, when that through the lungs is impeded by expiration. During expiration there is still some pulmonic circulation, a small quantity of blood passing from the lungs, through the left auricle to the ventricle of the same side, from whence it has a direct passage into the systemic aorta, the valve at its base will not even permit air to pass into the right side of the heart, nor will the semilimar valves of the aorta permit regurgitation, so that the only mixture of black and red blood takes place in the systemic aorta during expiration, or collapse of the lungs. The sys-

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temic and splanchnic aorta do not unite until after the viscera have been supplied with blood by the latter.

After this digression it will be very easy to comprehend the structure of the heart in the animal immediately under consideration. The heart, in fact, is similarly constructed externally: but, as this animal is terrestrial, there is no necessity for that complicated structure which exists in the crocodiles, and the ventricles communicate freely with each other. The three arteries which dilate immediately above this organ, uniting to form a complete sac, in the alligator, are indistinctly *observable*, or partially divided, in this animal; and in which also the splanchnic and systemic aorta unite, *previous to giving off the mesenteric branches.*

Dimensions.—Total length of the animal, 2 feet 4 inches; length of the head, 3 inches; breadth of the head, 2 inches; length of the body, 10 inches; length of the tail, 1 foot 3 inches.

Species 2d. Another species of the same genus brought from Tampico, and presented by Captain Dallas, has been living in the Philadelphia Museum for several months, and latterly in my possession. During the present month, (November) this animal has eaten nothing of its own accord, but when raw meat or fruit is placed in the mouth, he swallows it leisurely without chewing, showing most preference for the former, but always

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rejecting cooked meat. During the summer he subsisted chiefly on fruit, and was never observed to drink; of late he has become considerably torpid, remaining in one position for hours, without any disposition to move unless roused, when he displays considerable activity. He is exceedingly tame, and fond of being washed with a wet sponge; has shown not the least disposition to bite, but when teased or tickled on the leg, will defend himself with his prickly tail, with which he is able to strike in every direction.

Description.—Colour of this species, dark green, on some parts of his back, brilliant or glistening: *head* nearly quadrangular, occipital portion swollen by the large muscles of the jaws: *scales* pentagonal, largest about the snout: *skin* beneath the throat loose, and folded transversely. I never have observed this inflated, even when the animal laboured under the greatest degree of irritation: scales on the body, square, small and imbricate, (as in the Iguana) those of the sides, arms, and thighs, as well as the legs and forearms, bristled over with minute prickly spines: the dorsal crest or fringe composed of an uninterrupted series of corneous scales, extending from the occiput to the sacral region, where the back is without spines for the space of one inch, when the prickly tail commences: *tail* beautifully verticillate, perfectly cylindrical, tapering gradually towards the extremity, about two inches of which is lost; the

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spiniferous rings are about twenty-four in number, and appear to have extended the whole length of the tail; the scales which constitute the rings, are oblong, thick, and remarkably imbricate, so that a transverse section of the tail, including a spiny ring, with the two circular rows of depressed scales, would appear to be set into the ring which precedes it. The spines are longer, sharper, and more slender, than in the preceding species, and being all nearly of an equal size on the upper surface of the tail, there is no distinct carina, only there exists always one more spine than ring, intervening between the rings immediately upon the top of the tail; these spiny rings extend completely around the tail, becoming smaller, shorter, and less vertical on the lower surface: the rings are separated by two rows of smaller, depressed, and spineless scales, with the exception of those beneath, where all are furnished with spines; in the first four verticillations at the base of the tail the spines exist only on the upper surface: the claws are similar to those of the Iguana; there exists a row of glandular orifices, seven in number, on the inside of each thigh: *teeth* are small, conical and pointed, a single sharp, conical tooth occupying the usual situation of the middle incisor of the upper jaw is received into a hole of the inferior maxilla: *tongue* fleshy and extensible, merely notched at the tip; *palate* destitute of teeth: *trachea* as in species 1st, furnished with an

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epiglottis. Anatomy, nearly similar to species 1st, the three arteries which form the supercordal sac are merely united above the heart: *omentum* loaded with fat.

Dimensions. Total length of the animal, 1 foot 8 inches and a half, (allowing two inches for the lost portion of tail;) length of the head, 2 inches and a half; breadth of the head, 1 inch and a half; length of the body, 7 inches; actual length of the tail, 9 inches; (supposed length of the tail, 11 inches.)

Observations. On the most accurate comparison of the above described animals, with those *subgenera* to which they are most nearly allied, it appears to me, that they cannot be appropriately united with either, agreeably to the present state of the systems; for although both the individuals of which we are now treating, are unquestionably related in some traits of their organization, to the *Iguana*, the *Stellio*, and the *Agama*, yet they will be found to differ as much from either of these, as they respectively differ from each other.

The first described individual approaches the *Iguana* most nearly; the second, to the *Stellio;* they would therefore naturally occupy a station as a subgenus between the two. It is not improbable that other species may yet be discovered, and thus furnish another example of that arrangement which causes the productions of nature to succeed each other by almost imperceptible shades.

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The most remarkable peculiarities common to both these individuals, being the form and structure of the tail, we propose to designate them by a term significative of this circumstance.

Subgenus Cyclura.

Generic characters. *Palate* deprived of teeth; *tongue* fleshy and extensible, cleft at the tip; skin of the throat folded transversely; back furnished with a flexible crest or fringe: *tail*, about half the total length: *scales* which form the elevated rings, separated by two or more rows of depressed spineless scales above.

Species 1*st*, C. *carinata.* Pl. xv. Crowns of the teeth dentated; a row of corneous scales lines the infraorbiter ridge; dorsal crest wanting between the scapula, and also over the sacrum; scales of the body uniform, square, small, slightly imbricate and spineless: leg and foot furnished with scales, having minute spines pointing downwards: *tail* carinated above and slightly compressed in the middle; spiny bands terminating four inches from the extremity, and separated from each other by three rows of depressed scales.

Species 2*d*, C. *teres*, Pl. xvi. *Teeth* small, uniform and pointed; dorsal crest wanting only over the sacrum; scales on the sides, thighs and legs, bristled over with minute spines: *tail* cylindrical, tapering gradually towards the point; spiny rings encircle

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the tail, separated by two rows of depressed scales without spines above; spines on the rings nearly equal, extending to the end of the tail.

Observations on the Nomenclature of WILSON'S ORNITHOLOGY. *By* CHARLES BONAPARTE. *Read November* 23, 1824.

(CONTINUED FROM PAGE 200.)

PIPRA.

It is not a little remarkable that Wilson should have introduced this genus in his Ornithology. The bird he placed in it has certainly no relation to the Mannakins, nor has any one of that genus been found within the United States.

168. P. *Polyglotta.* Vol. i. p. 90. This bird has been placed by authors in half a dozen different genera. It was arranged in MUSCICAPA by Gmelin, Latham, and Pennant; in TURDUS, by Brisson and Buffon; in AMPELIS, by Sparrman, and in TANAGRA, by Desmarest. I was at first inclined to consider it a VIREO, and to adopt the genus ICTERIA of Vieillot, as a subgenus of VIREO, but after having dwelt more upon the characters and habits of this remarkable species, I have concluded to adopt

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ICTERIA as an independent genus agreeably to Vieillot. Vieillot's and Wilson's specific names must both be rejected, and the species will then stand as ICTERIA *viridis*.

SYNONYMES.

MUSCICAPA *viridis*, GMEL. LATH.

TANAGRA *olivacea*, DESMAREST, *Tangaras*, (his plate of the male.) His female and young belong to a different species.

TURDUS *viridis carolinensis*, BRISS.

ICTERIA *dumicola*, VIEILL. *pl. 55.*

Bartram called it GARRULUS *australis*; Sparrman, AMPELIS *lutea*, and Catesby, who first made it known, *Yellow breasted Chat.*

Although we adopt Vieillot's genus for this bird, we do not agree with that author as respects the collocation of the genus. We cannot conceive how Vieillot could place it so unnaturally as in his family of the Textores, with ORIOLUS and ICTERUS, inasmuch as he was generally very happy in his classifications. We place the genus with TURDUS, VIREO, MUSCICAPA, MOTACILLA, &c. in the family of the Canori. Some authors will be disposed to change the name of ICTERIA, from the circumstance of its great similarity to ICTERUS, but we think such a change would be altogether unnecessary.

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PARUS.

Of this very natural genus, admitted by all naturalists from the time of Aristotle, Wilson describes but two species, and these seem indeed to be the only ones known to inhabit this continent. Many others are, however, noticed by former writers, and the above assertion may therefore appear hazardous, until the species they have mentioned are considered. Thus, 1st, the PARUS *americanus*, Linn. is the SYLVIA *americana* (SYLVIA *pusilla*, Wils.) 2d, the PARUS *virginianus*, Linn. of which Vieillot without having seen it, made his SYLVIA *flavopygia*, and afterwards *xanthoroa*, we have no hesitation in declaring to be the SYLVIA *coronata*, in winter dress; 3d, the PARUS *ater* is an European bird, stated by Latham to inhabit this country, doubtless by mistake, in consequence of its similarity to the P. *atricapillus* described by Wilson; 4th, the variety of P. *palustris* of Latham, from Louisiana, is the *atricapillus*, as will be seen hereafter; 5th, the PARUS *hudsonius* of Gmelin and Latham, is also the P. *atricapillus* in imperfect dress. I am also convinced that P. *griseus* of Gmelin and Latham, from Greenland, is no other than REGULUS *calendulus*, under which I have quoted it.

169. P. *atricapillus*, Vol. i. p. 134. Whether or not this be the P. *palustris* of Europe, is a question which we find to be somewhat difficult to

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decide, although we have specimens of both before us. All the more ancient writers, as well as Vieillot, thought it distinct; but Temminck, after much consideration, refers them to one species. Our opinion, however, is, that though very closely allied, they are yet distinct, for the following reasons, in which we agree with Vieillot.

1st, It is somewhat larger, and the tail is proportionally longer.

2d, The black on the throat descends lower down, and the colours generally are obviously more pure and decided.

3d, The voice is different and the habits are more like those of the P. *major* and *cæruleus* of Europe, than those of the *palustris*.

4th, The young of the *atricapillus* differ considerably from the adults, in consequence of which a nominal species has been made of them; whilst the young of P. *palustris* are similar to the parents.

We therefore retain its characteristic name for this species.

SYNONYMES.

P. *atricapillus*, Linn. Gmel. Lath. Vieill. *Nouv. dict.* (not of Brisson.)

P. *hudsonius*, Gmel. Lath. Vieill. *Nouv. dict.* (young.)

P. *palustris*, var. β (from Louisiana.) Gmel. Lath.

P. *canadensis atricapillus*, Briss.

Mésange à gorge noire, Buff. *Pl. Enl.* 502, *f.* 1, (bad figure.)

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170. P. *bicolor*, Vol. i. p. 137. Although Latham states this bird to inhabit the north of Europe, yet from our own experience, and after consulting different authors, we have no hesitation in declaring it peculiar to this continent, on which it is found as far north as Greenland.

SYNONYMES.

PARUS *bicolor*, LINN. GMEL. LATH. VIEILL. *Nouv. dict.*
PARUS *carolinensis cristatus*, BRISS.
We owe its first introduction to Catesby.

HIRUNDO.

This genus, as admitted by Wilson, is now divided into two, viz. HIRUNDO, containing four of the five species of Wilson, and CYPSELUS, to which the remaining species belongs. As Linné originally formed it, it was more extensive, embracing the present genus CAPRIMULGUS, and having the same boundaries that now circumscribe the family CHELIDONES. In this, as in almost every other part of natural history, Linné exhibited his transcendent genius; new discoveries have required many divisions, but his genera have always remained as great genera, or families.

171. H. *purpurea*, Vol. v. p. 58. The largest of its genus in North America, and peculiar to this continent, visiting every part of it from north to south.

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It is very remarkable in this genus for exhibiting a wide difference between the sexes; hence, in part, the great multiplication of nominal species to which it has given rise. Latham was the first to perceive these errors; and Vieillot, not satisfied with five different names, added a sixth, which afterwards he changed for a seventh.

SYNONYMES.

H. *purpurea*, LINN. GMEL. (male) LATH.
H. *subis*, LINN. GMEL. (female and young.)
H. *violacea*, GMEL. (adult male.)
H. *apos carolinensis*, BRISS. (male.)
H. *freti hudsonis*, BRISS. (female and young.)
Hirondelles de la Louisiane, BUFF. *Pl. Enl.* 722, (adult male.)
HIRUNDO *cærulea*, VIEILL. *pl.* 26, (male.) *pl.* 27, (female.) Since HIRUNDO *versicolor*.

Although Brisson and others have considered this species as closely allied to the *apus*, the type of the genus CYPSELUS, yet it has no point of resemblance, if we except its large size; it is a true HIRUNDO as the genus now stands.

172. H. *americana*, Vol. v. p. 34. Wilson deserves commendation for having proved this bird to be distinct from the H. *rustica* of the old continent, with which, as he informs us, it was then generally believed to be identical. But he was not aware that Gmelin and Latham had already distinguished it, (though not very positively) by

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the name of H. *rufa*. Under this name, which must be exclusively adopted, Vieillot figured it in his large work, and also placed its difference beyond a doubt. Wilson's name was pre-occupied.

SYNONYMES.

HIRUNDO *rufa*, GMEL. LATH. VIEILL. *pl.* 30.

Hirondelle à ventre roux de Cayenne, BUFF. *Pl. Enl.* 724, *f.* 1, (female.)

All authors who state the H. *rustica* to be a cosmopolite, have, with respect to America, mistaken this species for it. It is more remarkable that Vieillot and other modern writers, who knew this bird perfectly well, should, notwithstanding, declare the H. *rustica* to inhabit North America. But we believe it does not visit this continent, and that the deception has arisen from the white appearance of the belly in young specimens of *rufa*.

173. H. *viridis*, Vol. v. p. 44. As the preceding had been mistaken for H. *rustica*, so the present bird had been confounded with the H. *urbica*, of the old continent, which does not inhabit America.

Wilson was therefore right to consider it as new, and to give it a name. But, as on many other occasions, he has been anticipated by Vieillot, whose name of *bicolor* must consequently be adopted.

SYNONYMES.

HIRUNDO *bicolor*, VIEILL. *pl.* 31.

HIRUNDO *urbica* var. *ß*, GMEL. LATH. (young as it has the tip of the wing and tail feathers whitish.)

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Stephens, by a strange and unaccountable mistake, calls Wilson's bird, (which he quotes as *bicolor*) H. *leucogaster*, thinking it distinct from that of Vieillot.

174. * H. *riparia*, Vol. v. p. 46. This is the only Swallow common to Europe and North America. Of this identity doubts have been expressed by some authors, but after a careful comparison of the two birds we have no hesitation in declaring them one species. Vieillot's observation relative to the greater length of the tarsus, and its nudity of feathers in the American specimens, is not correct. The feet are perfectly alike, and with the tarsus naked in both birds, if we except four or five small feathers situated at the insertion of the hind toe, and these exactly correspond in the European and American specimens.

SYNONYMES.

HIRUNDO *riparia*, LINN. BRISS. GMEL. LATH. TEMM.
Hirondelle de rivage, BUFF. *Pl. Enl.* 543, *f.* 2, (young.)

Boie has lately made a genus of this bird, with the name of COTILE, but I do not know what characters he may be able to assign to it.

175. H. *pelasgia*, Vol. v. p. 48. Finding in this singular bird the characters which distinguish the genus CYPSELUS, I have no hesitation in placing it in that genus, agreeably to Temminck, calling it CYPSELUS *pelasgius*. It is peculiar to North Ameri-

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ca, and the only one of its genus found here. Although Vieillot and some others of the best recent Ornithologists, admit the genus CYPSELUS, yet they consider the present bird as a HIRUNDO of a peculiar subdivision.

SYNONYMES.

HIRUNDO *pelasgia*, LINN. GMEL. LATH. VIEILL. *pl.* 33.

HIRUNDO *carolinensis*, BRISS.

Hirondelle à queue pointue de la Louisiane, BUFF. *Pl. Enl.* 726, *f.* 2. (This is not a variety as authors state, but a different state owing to age. Naturalists have usually designated every trifling difference as a variety; but when these supposed varieties are closely studied, they are found to be either entirely distinct species, or only differences of age or sex, if we except some albinos and other accidental aberrations from the standard of the species.

Hirondelle à queue pointue de Cayenne? BUFF. *Pl. Enl.* 726, *f.* 1.

The genus CYPSELUS, to which we assign this bird, under the limits prescribed by Temminck, was first established by Scopoli, who called it APUS.

It was rejected by Gmelin, Latham, Lacépède and others, and considered as a subgenus by Oken and Cuvier. Duméril adopted it under the first name: Illiger, Vieillot, Temminck, and others admitted it; some retaining Scopoli's name, and some, as Wolf and Meyer, changing it to that of MICROPUS, and afterwards to that of BRACHIPUS But the name of CYPSELUS was given by Illiger, from Aristotle, after he had condemned the others

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as being irregular in their formation; and as this designation has now been generally adopted, we have thought proper to preserve it. This may, perhaps, be considered by some naturalists, an act of injustice to Scopoli, but we cannot successfully oppose the determination of naturalists in this respect, and we do not conceive that we are required to be as scrupulous with regard to generic names as we ought to be of specific ones, which must always be retained, however bad they may be, whilst not one awkward or incorrect generic name should be permitted to remain.

Caprimulgus.

This genus, which differs from Hirundo as Strix does from Falco, has been adopted by all naturalists from the time of Linné, (who in his first edition placed it in Hirundo) and Brisson. It is a very natural group, and we think that Vieillot would have done better to have considered his genus Nyctibius as a subgenus. The three species so well described, figured and elucidated by Wilson, are all peculiar to America.

176. C. *carolinensis*, Vol. vi. p. 95. Though it is almost impossible to decide which of the closely allied species of this genus authors had in view, by their short descriptions, particularly as the species are evidently confounded with one another in their respective articles, yet we believe Wilson

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had good reason to refer the Chuck-will's widow to the C. *carolinensis*. But he shows his uncertainty with respect to it by omitting all synonymes. This was also the case with Vieillot, who calls this bird C. *rufus*, having without any apparent good reason, considered the *carolinensis* as the same species as his C. *popetue*, to which, in that case, he would have done well to have left the name: but he proves himself in error by stating that authors are incorrect in attributing to the bird a different size, colour, and form of tail.

We shall adopt Wilson's opinion, which, after much examination, we think the most probable.

SYNONYMES.

CAPRIMULGUS *carolinensis*, GMEL. LATH. BRISS.

CAPRIMULGUS *rufus*, VIEILL. *pl.* 25, (female.) In the *nouv. dict.* he unites three species under this name.

Wilson corrected the errors that had been committed with respect to this and the two following species, the habits of all which had previously been confusedly intermixed. Stephens has increased the confusion by calling it C. *brachypterus*.

177. C. *americanus*, Vol. v. p. 65. Although this is the most common of the three species, yet it is remarkable that it was not correctly noticed by any writer before Wilson and Vieillot. It is however evident that part of the description of C. *virginianus*, is taken from it, as is proved, if by no other character, certainly by the white wing spot which is there mentioned. So that the name

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of *virginianus* which has been applied by Vieillot to the following, might with equal propriety have been given to this species, from the circumstance of the description, history, and habits partaking of both. Our author, who is so admirably correct as regards the history, description, &c. has inadvertently given a name already employed in this genus. Vieillot's name of C. *popetue*, awkward as it is, must be adopted, having the priority.

SYNONYME.

CAPRIMULGUS *popetue*, VIEILL. *pl.* 24, (female.)

CAPRIMULGUS *virginianus*, GMEL. LATH. BRISS. (a monstrous combination of this and the following species,) VIEILL. *pl.* 23.

CAPRIMULGUS *europæus*, *β minor americanus*, LINN. (the same monstrous combination.)

The error seems to have originated from Catesby's bad figure, which is a compound of the two species, or rather which represents the C. *popetue*, (Night Hawk) with bristles which are proper to the *vociferus* (Whip-poor-will.)

178. C. *vociferus*, Vol. v. p. 71. Vieillot applied to this bird the name of C. *virginianus*, which is evidently proper to the preceding as well as to this bird, the description and history being as before stated, a compound of the characters of both; this fact, however, he does not mention; but being probably afterwards aware of it, he changed the name to *clamator*, a name corresponding in mean-

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ing to that of Wilson, which he ought to have adopted, rather than to introduce a new one.

Wilson deserves the highest commendation for having so elegantly and perspicuously elucidated the history of the species, and for having extricated the North American Caprimulgi from the confusion that involved them. Had he performed no other service for the benefit of science, this alone would have been a monument of his accuracy.

From a consideration of the above circumstances, I think Wilson's name must be exclusively adopted, as the only means of avoiding future confusion.

SYNONYMES.

Caprimulgus *virginianus*, Vieill. *pl.* 23.

Columba.

This genus is so well characterized that it has constituted a distinct family in the estimation of all ornithologists, and even in that of several, a distinct order. Some of the former have arranged it with the Passeres, and others with the Gallinæ; it is in fact intermediate to both, and by some species approaches closely to Gallinæ. But I cannot hesitate to place it with the Passeres, from some traits in the conformation of the species, as well as from their habits, and principally from the circumstance of the hind toe being articulated on the same plane with the others, and bearing equally on the ground its whole length.

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Though forming a distinct family, and very numerous in species, yet this genus, as is the case with many other well characterized genera, also abundant in species, as FALCO, STRIX, PSITTACUS, FRINGILLA, ANAS, PICUS, &c. cannot well be separated, excepting into sections or subgenera. Attempts have, however, been made to separate the species generically, by Vieillot, Stephens, and others: we divide the genus into three subgenera, adopting the names of *Columba*, *Vinago*, and *Goüra*. The three species of Wilson are all peculiar to America, two of them belong to the first subgenus, and the other to the latter.

179. C. *migratoria*, Vol. v. p. 102. A well known species described twice in the systems. Our author's history of it is perfect.

SYNONYMES.

COLUMBA *migratoria*, LINN. GMEL. LATH. (adult male.) VIEILL. *Nouv. dict. d'hist. Nat.* TEMM. *Les Pigeons*, folio, Paris, 1811, *pl.* 48 of the second section, (male,) *pl.* 49, (female, resembling a young male taking the adult dress.)

COLUMBA *canadensis*, LINN. GMEL. LATH. (female and young, the latter considered as the female of the nominal species.)

COLUMBA *œnas americana*, BRISS. (adult male.)

COLUMBA *canadensis*, BRISS. (female and young as above.)

Tourterelle de Canada, BUFF. *Pl. Enl.* 176, (female, a bad figure.)

180. C. *carolinensis*, Vol. v. p. 91. This familiar species has also been described twice in the same books.

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SYNONYMES.

COLUMBA *carolinensis*, LINN. GMEL. LATH. VIEILL. *Nouv. dict.* TEMM. *Pigeons, pl.* 80, of the second section.

COLUMBA *marginata*, LINN. GMEL. LATH.

COLUMBA *turtur carolinensis*, BRISS.

COLUMBA *turtur americanus*, BRISS.

Tourterelle de la Caroline, BUFF. *Pl. Enl.* 175, (female, a very bad figure, in which, amongst other errors, the bill is red instead of black.)

181. C. *passerina*, Vol. vi. p. 15. This very small species belongs to that peculiar subdivision which approaches more to the order Gallinæ, and which, for that reason, has been called Columbi-gallinæ, forming the genus GOURA of Stephens. It inhabits only the southern states.

SYNONYMES.

COLUMBA *passerina*, LINN. GMEL. LATH. VIEILL. TEMM. *Pigeons, pl.* 13 of the third section, (male,) *pl.* 14, (female.)

COLUMBA *turtur parvus americanus*, BRISS.

Petite Tourterelle de la Martinique, BUFF. *Pl. Enl.* 243, *f.* 2, (bad figure,) (*fig.* 1, *Petite Tourterelle de St. Domingue*, is generally quoted here also, but we believe, with Vieillot, that it belongs to another species.)

Wilson erroneously quotes COLUMBA *minuta*, LINN. as a synonyme.

TETRAO.

As first formed by Linné, this genus was very extensive, embracing besides all the Grouse. Par-

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tridges, Quails, &c. also the PHASIANUS *colchicus*, which however, that author afterwards removed from it. Brisson, Latham, Temminck, Vieillot, and other recent Ornithologists, have agreed in restricting the genus TETRAO, but they have differed in the manner of doing it. We perfectly agree with Temminck as respects the limits he assigns to it, so as to include *Tetrao* and *Lagopus*, of Vieillot, adopted by us as subgenera. We also agree with him as to the genera separated from it. The two species described by Wilson, belong to the former subgenus. They are both peculiar to America, and have been most unaccountably mistaken for one species.

182. T. *umbellus*, Vol. vi. p. 45. The local appellation (Pheasant) of this bird is erroneous, as it is a true Grouse. The history and figure are perfect in Wilson; the bird has been twice noticed in the systems.

SYNONYMES.

TETRAO *umbellus*, LINN. GMEL. LATH. VIEILL. *Nouv. dict.*

TETRAO *togatus*, LINN. GMEL. (young, rather than female as Latham states.)

LAGOPUS *attagen Pensylvaniæ*, BRISSON.

LAGOPUS *bonasa major canadensis*, BRISS. (young.)

Grosse Gélinotte du Canada, BUFF. *Pl. Enl.* 104, (bad fig. of the young.)

Stephens calls it BONASA *umbellus*, having made

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a genus which we do not think proper to adopt, even as a subgenus.

The nominal species, as Sabine observes, originated, as is often the case, from a bad figure; the T. *umbellus* being described from nature, and the T. *togatus* from Edwards' wretched figure.

183. T. *cupido*, Vol. iii. p. 104. We cannot conceive how Buffon, and more recently Cuvier, could quote this remarkable species as a synonyme of the preceding. No American would mistake this delicious Grouse for the trivial "Pheasant."

We should think this error hardly worthy of notice, did not some recent compilers, even with Wilson's work before them, still persist in expressing a doubt of the specific difference of T. *umbellus* and T. *cupido!*

SYNONYMES.

TETRAO *cupido*, LINN. GMEL. LATH. VIEILL. *Nouv. dict.*
LAGOPUS *attagen americana*, BRISS.
BONASA *cupido*, STEPHENS.

PERDIX.

This is one of the genera that have been separated from the Linnæan TETRAO. It was formed by Brisson and Latham, and adopted by Illiger, Temminck, Vieillot and others. But authors vary somewhat in their respective limits, some being too extensive and others not sufficiently so. We agree in this respect with Temminck and Vieillot,

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and distribute the species in four subgenera, corresponding to the sections of those authors, viz. *Francolinus*, *Perdix*, *Ortyx*, and *Coturnix*, all of which are considered as genera by Stephens.

184. P. *virginiana*, Vol. vi. p. 21. The only species known to inhabit this part of North America. It is extended over almost every part of the country. It belongs to the subgenus Ortyx. We find it described under three different names in the systems, and this has induced Vieillot to give a fourth, that of P. *borealis*. But in such a case we must select one of the old names, and as Wilson has already chosen that of P. *virginiana*, I think it must prevail.

SYNONYMES.

Tetrao *virginianus*, Linn. Gmel. (female.)

Tetrao *marilandicus*, Linn. Gmel. (adult male; Gmelin, however, correctly indicates also the female.)

Tetrao *mexicanus*, Linn. Gmel. (adult male, erroneously given with a red bill and feet.)

Perdix *virginiana*, Lath. (female.)

Perdix *marilanda*, Lath. (male.)

Perdix *mexicana*, Lath. (adult male given with a red bill and feet.)

Perdix *americana*, Brisson, (female.)

Perdix *novæ angliæ*, Briss. (male.)

Coturnix *ludoviciana*, Briss. (male with red bill and feet.)

Caille de la Louisiane, Buff. *Pl. Enl.* 149, (a bad figure of the male with reddish bill and feet.)

Perdix *borealis*, Vieill. *Nouv. dict.*

Ortyx *borealis*, Stephens.

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Having now passed in review all the land birds described by our author, this may be the proper place to correct a few errors, and add some observations which subsequent opportunities have enabled us to make.

2. VULTUR *atratus*. I called this bird CATHARTES *urubu*, but as Bartram has the priority, we are authorized to reject Vieillot's barbarous name for that adopted by Wilson. The bird will then be known as CATHARTES *atratus*.

The quotation of Latham's synonyme is incorrect; it ought to be

V. *aura* var β? LATH.

Another synonyme is

V. *aura* β *jota*? GMEL.

If the VULTUR *jota* of Molina be certainly this bird, that name ought to be adopted as having the priority.

11, 12. FALCO *borealis* and F. *leverianus*. I expressed my belief of the identity of these two species, which has since been corroborated by observations on the living bird. They are in reality, but one species, differing only from age, both sexes being found in each description of plumage, as Wilson very correctly observed. "My reason," says Wilson, "for inclining to consider this (the *leverianus*) a distinct species from the last (the *borealis*) is that of having uniformly found the

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present 2 or 3 inches larger than the former, though this may possibly be owing to their greater age." In this, however, he is mistaken, for when birds have attained their full size, as in both his birds, they only change plumage, but never their stature; he must have taken his admeasurement of the *borealis* from males, (his figure is that of a male,) and that of the *leverianus* from females. But be this as it may, I have always found the males in both states of plumage twenty inches, (a size which Wilson gives to the *borealis*,) and the females also of both twenty-two inches, (his size for *leverianus*.)

17. F. *Mississippiensis*. Temminck has lately given a figure of the F. *plumbeus*, (which I suppose to be the same with this bird) when in the second year of its age.

SYNONYME.

Milan Cresserelle jeune, TEMM. *Pl. Col.* 180.

We cannot conceive why Temminck does not quote Wilson's figure, which is certainly by far the best, and represents a more perfect state of plumage than that of Vieillot. Is it because he thinks the F. *Mississippiensis* of Wilson, a distinct species? we can hardly suppose it.

18. * F. *lagopus*. An essential synonyme has been omitted, it is

F. *sclavonicus*, LATH.

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20, 21. F. *hyemalis* and F. *lineatus*. I have now no doubt of the specific identity of these two Hawks: *lineatus* is the young, and *hyemalis* the adult; the very young bears a still distinct plumage, and has luckily escaped the fabricators of nominal species, who, had they met with it, would undoubtedly have augmented their chaotic catalogue with it.

30. * Strix *otus*. When I wrote the article on this bird, I had not seen it, (as indicated by the mark §) and believed Vieillot correct in noticing the American species as distinct from the European. But having since procured several specimens, I have ascertained that Wilson was right in considering his species as the same with the European. The name must therefore be restored, and the mark * be prefixed to it. It is, however, possible that two allied species may be inhabitants of North America, one the same, and the other different from that of Europe. This would certainly be the case, if Vieillot's figure was a faithful copy of nature; but as he states his bird to inhabit all the continent of North America, we are rather inclined to believe there is but one, and that the great difference is the result of the incorrectness of his figure; the synonymes, besides those already given, will then be

Strix *otus*, Linn. Gmel. Lath. Temm.
Moyen duc ou hibou. Buff. *Pl. Enl.* 29.

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31, 32. S. *asio*, and S. *nævia*. I expressed my opinion in favour of the specific identity of these two Owls; and having since received the Pl. col. 80, of Temminck, (*Hibou asio*, male) representing a male nearly adult, I was much pleased to find that the opinion of that eminent Ornithologist coincides with mine. I have now in my collection a complete series of the changes of this bird from almost black to pale ferruginous-red; all doubt must therefore be dissipated in relation to the subject. Temminck is, however, mistaken in stating the *asio* to be the young female, and *nævia* to be the old male; both sexes occur in all the different states of plumage; *asio* is the young bird, and *nævia* is the adult. I cannot help expressing my belief that the similar changes of the S. *aluco* of Europe, will be found to be also owing to age and not to sex.

33. * Lanius *excubitor*. Having lately shot a specimen of this species in New Jersey, I was enabled to ascertain that though closely allied to the *excubitor*, it is a distinct species, as stated by Vieillot; his name of L. *borealis* must, therefore, be exclusively adopted.

34. L. *carolinensis*. I have stated that the name of Vieillot, L. *ardosiaceus*, ought to be adopted as having the priority over that of Wilson. This was only because I then considered as doubtful the synonyme of L. *ludovicianus*, which I therefore quoted with a note of interrogation. Having

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since fully ascertained that this synonyme is correct, I propose to restore the Linnæan name to that shrike. Latham led me in error by stating that the crown (*pileus*) is black.

Our bird is undoubtedly the L. *ludovicianus* of Brisson, and Linné, as may be ascertained by their excellent description. It is also the L. *ludovicianus* of Gmelin, but that author was wrong in quoting amongst the synonymes, Buff. Pl. Enl. 397, this bird not being represented in that work. Latham in his synopsis had indicated our bird, under the name of *Louisiana shrike*, but he also quoted the above named plate. Gmelin probably took his authority.

In his index, Latham perceived that mistake, but he fell in a greater one, which was to unite to the L. *ludovicianus*, the black-crowned shrike of Pennant, which that author erroneously supposed to be L. *ludovicianus*, and of which Gmelin has made his L. *americanus*. The latter has a black crown which the *ludovicianus* has not. This induced me to state that L. *ludovicianus* of Latham was certainly not this bird.

35. Psittacus *carolinensis*. Add to the synonymes,

Psittacus *ludovicianus*, Gmel.
Perruche Illinoise, Buff. *Pl. Enl.* 528, (young.)

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ORIOLUS.

After having separated from this genus as adopted by Temminck, those birds of which we form the genus QUISCALUS agreeably to Vieillot, we subdivide the remaining species into four subgenera:

1. *Cassicus*, corresponding to Illiger's and Vieillot's genus of that name. The species are distinguished by having the frontal angle (in the feathers,) wide and semicircular, while the three other subgenera have it acute and not profound.

2. *Xanthornus*, corresponding to AGELAIUS of Vieillot, and included in the genus ORIOLUS of Illiger. The bill is straight, thick at base, and acuminate.

3. *Emberizoides*, some species of which Vieillot refers to his genus PASSERINA, they form the passage to FRINGILLA. This subgenus is so closely allied to the preceding that it would be perhaps better to unite them; the bill is only less acuminate.

4. *Icterus*, which agrees with the two genera YPHANTES and PENDULINUS of Vieillot, and is included in Illiger's ORIOLUS. Some species of this subgenus form the link between ICTERUS and the subgenus *Dacnis* of Cuvier; the bill is comparatively slender and slightly bent towards the tip.

44. O. *mutatus*. In the synonymes, after TURDUS *ater*, Gmel. Lath. dele Lath. and put in its stead, TURDUS *jugularis*, Lath.

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46. GRACULA *ferruginea.* With Wilson I erred in giving amongst the synonymes of this species, ORIOLUS *niger*, Gmel. Lath. which belongs to a distinct species of the same genus (QUISCALUS) inhabiting the West Indies and South America, but which has not been found in the United States. The individual stated by Latham to have been found here, is the Q. *ferrugineus* in perfect dress.

55. PICUS *varius.* The following synonyme was inadvertently omitted.

Pic varie de la Caroline, BUFF. *Pl. Enl.* 785. (ad. male.)

PICUS *carolinus.* For *Pic rayé femelle de la Jamaique*, read *Pic varié, &c.*

60. SITTA *varia.* Being now satisfied that the S. *canadensis* of Linné is the young of this species, I think the latter specific name must exclusively be adopted.

72. TURDUS *solitarius.* Add to the synonymes, T. *fuscus*, Gmel. Lath.

74. T. *aquaticus.* As indicated by the mark § prefixed to that article, I had not then seen the bird. But having last autumn procured specimens, I have ascertained it to be a Warbler, and not a Thrush, closely allied to the SYLVIA *aurocapilla* (TURDUS *aurocapillus*, Wilson.) These two species cannot be separated even subgenerically, and they must therefore be placed either in SYLVIA or TURDUS; but I believe authors had no other reason for referring these birds to the latter genus, than

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that they have a spotted breast. Whether or not that bird and the TURDUS *motacilla*, Vieill. are one species, is doubtful, but it is certainly SYLVIA *noveboracensis* Lath. as we have ascertained from the very specimen Wilson described. If, therefore, TURDUS *motacilla*, Vieill. be a real species, it must be distinct from T. *aquaticus*. This we do not believe to be the case, and if we are correct in our conjecture, Vieillot has described and figured the same bird under two different names.

SYNONYMES.

MOTACILLA *noveboracensis*, GMEL.
SYLVIA *noveboracensis*, LATH. VIEILL. *pl.* 82.
MOTACILLA *tigrina*, var. β, GMEL. (female and young.)
SYLVIA *tigrina*, var. β, LATH. (female and young.)
SYLVIA *anthoides*, VIEILL. *Nouv. dict. d'hist. nat.*
FICEDULA *dominicensis fusca*, BRISS. (female and young.)
Fauvette tachetée de la Louisiane, BUFF. *Pl. Enl.* 752, *f.* 1, (a very bad figure.)
New York warbler, PENN. *Arct. Zool.* LATH. *Syn.*

86. EMBERIZA *erythrophthalma*. I referred this bird to the subgenus *Coccothraustes*, but I now think better to range it in the subgenus *Fringilla*, its bill not being quite large enough to entitle it to rank in the former station. The following synonyme misquoted by Wilson and myself under F. *iliaca* (*rufa* Wils.) must be placed under this bird, to which it belongs beyond a doubt, as appears to have been the ultimate opinion of Wilson.

EMBERIZA *ferruginea*, GMEL. LATH. (female.)

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97. FRINGILLA *purpurea.* I stated the PYRRHULA *erythrina* to be common to the north of both continents, and that it would be represented in the first volume of my continuation of Wilson's Ornithology. But notwithstanding the statements of authors, it appears not to exist in this continent. I had reference to an allied species.

102. F. *nivalis.* An essential error has occurred in relation to this bird. It was stated that the name is correct, and that the species is common to both continents. But the fact is that the species is widely different from that of Europe, and must be called FRINGILLA *hyemalis.* It is evidently by a typographical transposition, that Temminck states the F. *nivalis* to inhabit North America, and it is for want of examining for themselves that recent compilers have repeated this error. The remaining part of the article is *correct*, excepting the synonyme of F. *nivalis*, which must be rejected.

We also stated this bird to belong to the subgenus *Fringilla*, but we regard it as a *Spiza*, though it has not the characters of that subgenus strongly marked.

127. MUSCICAPA *pusilla.* Having lately had an opportunity of examining this pretty little bird, I had the pleasure of finding my conjectures correct in regard to it.

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Descriptions of four new Species of the Linnæan genus BLENNIUS, *and a new* EXOCETUS. *By* WILLIAM W. WOOD. *Read December* 14, 1824.

BLENNIUS, *Cuv.*

1. B. *geminatus.* Head with a three rayed cirrhus over each eye; body with several pairs of brownish spots on the sides, above which are confluent marks on the back, extending a little way upon the dorsal fin. Dorsal fin with an irregular blackish spot, anteriorly.

Head thick, large, anteriorly rounded, channeled between the eyes; a cirrhus of three rays over each eye, above a quarter of an inch in length, slender and delicate: *mouth* descending very little: *upper lip* large, thick: *gape* small: *throat* obscurely bifasciate with brownish beneath: *nostrils* appendiculated: *opercula* fleshy: *eyes* moderate, approximated: *body* compressed: *back* somewhat arched: *belly* a little protuberant; rib-spaces evident: *sides* with several pairs of spots of a reddish-brown colour, arranged pretty regularly in a double row, above which are confluent marks upon the back, extending partly over the dorsal fin: *dorsal* with an irregular blackish spot before the origin of the pectoral fin; slightly joined to the caudal fin, at the base; arched a little posteriorly: *caudal fin* rounded: *anal fin* nearly touching

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the tail, and having a longitudinal blackish band near its exterior margin; tubercle of the anus small: *ventral fins* two-rayed, pointed: *pectoral fin* rounded, base thick and fleshy, with a branched dusky brown band.

Cabinet of the Academy.

Inhabits the harbour of Charleston, S. C. from whence it and the two following species were sent to the Academy, by Captain Bache, of the U. S. Topographical Engineers.

Its colour in spirits is brownish, and the spots of a brownish red.

D. 27. P. 13. V. 2. A. 17. C. 14; imperfect rays.

Length, two inches and three-eighths; depth, half an inch.

2. B. *punctatus.* A bifurcated cirrhus over each eye; dorsal fin with an irregular blackish spot between the first and third rays; body thickly covered with small blackish spots, which are confluent on the sides; caudal fin with five obscure brownish bands.

Head thick, somewhat rounded anteriorly, in a line from the dorsal fin to the snout: *eyes* oblong, very approximate; surrounded by a circle of raised blackish points; a bifurcated cirrhus or appendage about half an inch in length, over each, the extremities of which are pointed: *nostrils* with a small appendage: *snout*, *front*, top, and sides of the head thickly covered with small, irregular

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blackish spots; between the appendages over the eyes and the commencement of the dorsal fin, are two slight and roughish prominences: *mouth* small, slightly descending: *upper lip* thick: *body* compressed gradually from the pectoral fins: *dorsal fin* commencing a little before the pectoral fin and continuing to the caudal fin, which it partly joins at the base: *caudal fin* rounded, with five obscure brownish bands: *anal fin* dusky, tubercle before it small: *ventral fins* three-rayed, pointed, blackish: *pectoral fins* large, rounded, base thick, fleshy, dotted with blackish, the rays obscurely fasciated with dusky: *lateral line* arched over the pectoral fin.

Note.—Branchial aperture three-eighths of an inch in length.

D. 27. P. 14. V. 3. A. 18. C. $11\frac{1}{1}$ imperfect rays.

Inhabits Charleston harbour.

Length three inches; depth one inch, exclusive of the dorsal fin.

Pholis, *Artedi.*

1. P. *novemlineatus.* Body with nine whitish longitudinal bands; dorsal fin with an irregular blackish spot between the first and second rays; remainder of the fin clouded with dusky brown.

Head descending somewhat abruptly, tubercu-

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lated anteriorly: *nostrils* with a small appendage: *head, lips, opercula,* &c. and base of the pectoral fins, finely spotted with bluish-black, the spots being larger on the front and opercula: *branchial opening* extremely small, extending one-third of the length of the external curve of the operculum: *mouth* descending little: *gape* moderate: *sides of the head* fleshy: *body* compressed: *rib-spaces* evident: *sides* with nine longitudinal whitish lines, some of which are interrupted; behind the eye and under the dorsal fin are two irregular whitish patches: *dorsal fin* commencing before the pectoral fins; between the first and second ray is an irregular blackish spot, several of the following rays are also spotted, the colour of the spots becoming lighter as they recede towards the tail, where they mingle with the dusky colour of the fin and are lost; fin rising posteriorly, and joining the caudal fin at about half the distance from its extremity: *anal fin* commencing under the termination of the pectoral fin, and extending nearly to the tail: *caudal fin* rounded: *ventral fins* two-rayed: *pectoral fins* rather large, the base thick and fleshy, finely spotted with bluish-black: *anus* small, tubercle small: *colour* brownish, fins dusky.

D. 30. C. 12$\frac{3}{3}$; A. 20. V. 2. P. 13.

Inhabits Charleston harbour.

Cabinet of the Academy.

Length three inches and a quarter; depth, exclusive of the dorsal fin, hardly one inch.

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2. P. *quadrifasciatus*. Pl. xvii. fig. 1. Dorsal fin not joining the tail; body with four distinct brownish bands, and an interrupted obscure broad band on the neck; belly with four yellowish spots over the anal fin; ventral fins fasciate with brown.

Head not descending abruptly, spotted with blackish: *branchial opening* extremely small: *eyes* moderate, approximate: *lower jaw* a little longer: *mouth* descending: *body* elongate compressed: *back* not convex: *belly* little protuberant: *tail* narrowing somewhat abruptly: *body* very mucous: *dorsal fin* pretty deep, rising slightly posteriorly, and not joining the tail; it rises just over the branchial aperture: *caudal fin* rounded: *anal fin* deeper anteriorly, terminating very near the tail: *ventral fins* three-rayed, fasciated with blackish: *pectoral fins* placed just behind the origin of the dorsal fin, large, rounded: *belly* with four spots of a dull yellow, just over the anal fin: *lateral line* nearly straight.

D. 27. C. 9. A. 15. P. 11. V. 2.

Length two inches and a half; depth, exclusive of the dorsal fin, six-eighths of an inch.

For this last species I am indebted to Mr. Rubens Peale, of the Baltimore Museum, who presented me with a specimen. Another in his possession was somewhat larger.

Native place unknown.

All the above species having been described

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from specimens preserved in spirits, the description of the colours cannot be relied on.

EXOCETUS.

E. *appendiculatus*. Pl. xvii. fig. 2. Lower jaw with a long trifurcated cirrhus, the middle branch of which is longest, extending about two-thirds of the length of the body; the lateral branches very short.

Head subtriangular, depressed in the middle, declivous; sides of the head above and behind the eyes somewhat angular: *snout* somewhat obtuse, rather narrow: *nostrils* not very approximate: *opercula* flattish, silvery: *branchial aperture* slightly oblique: *mouth* small, slightly descending: *body* subfusiform, covered with large scales: *abdomen* angular, slightly arcuate: *back* somewhat convex: *tail* rather narrow: *pectoral fins* long, extending nearly to the termination of the dorsal fin: *dorsal fin* moderate, narrow, somewhat hollowed: *ventral fins* extending from directly under the dorsal fin, a little beyond the insertion of the caudal fin: *anal fin* small, placed near the tail, narrow: *anus* nearer the tail: *caudal fin* with the inferior lobe longer, both lobes rounded.

P. 13. D. 14. C. 18 or 19. V. 6. A. 7.

Length five inches and a quarter.

In the Baltimore Museum.

Its native place is unknown.

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This species approaches to E. *comatus*, described by Dr. Mitchell in *Trans. New York Lit. and Philos. Soc.* but differs in wanting the lateral branches of the cirrhus, and in several minor characters.

Description of a new Species of BIPED SEPS. *By* RICHARD HARLAN, M. D. *Read December 7th*, 1824.

SEPS.

S. *sexilineata*. Pl. xviii. fig. 2. *Body* above and beneath, whitish, clothed with equal rounded scales, compactly imbricate; top of the head blackish, furnished with twelve irregularly shaped scales or plates, (similar to those of the OPHISAURUS) of different figures and unequal sizes; the three largest of the plates are placed one before the other, and the nine smaller are distributed around the three first. Three dark punctuated lines on each side of the body, extend from the neck to the middle of the tail, run into each other anteriorly, and form a single black line which passes through the eyes, extending to the nostrils: rictus of the mouth wide: *nostrils* situate on a line with the eyes near the extremity of the snout: a single row of minute teeth line each maxilla: *tail* rather more than

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one-fourth the length of the body, cylindrical, somewhat subulate: *anus* a transverse slit, one inch from the extremity of the tail: on each side of the vent, projects a small leg, terminating in two corneous toes, somewhat aduncate, the external considerably the longest: external ear, or membrana tympani, a scarcely visible point posterior to the angle of the mouth.

Total length four inches; from the tip of the snout to the vent, two inches and eight-tenths; from the vent to the extremity of the tail, eleven-tenths; length of the head, three-tenths; breadth of the head, two-tenths; length of the legs, three-tenths; girth, seven-tenths.

OBSERVATIONS. The BIPED SEPS have been discovered in Europe, Africa, America, and India. I know not from what part of the globe the present specimen was obtained, I found it among the LACERTÆ belonging to the Philadelphia Museum, where it had remained for several years preserved in spirits.

Three species only of BIPED SEPS have been acknowledged by Daudin—viz. 1st, S. *didactyle*, described by Schneider, (*2d fascic. Hist. Nat. des Amphib.*) 2d, S. *subdidactyle* or the *Shettopusick* of *Pallas*, and 3d, S. *monodactyle* of Gronovius; to neither of which can our reptile be referred; it resembles still less the "*Bipède lépidopode*," of New Holland, described by Lacépède (*Annales du Muséum*, Vol. iv.) It approaches nearest to

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a variety of the third species or S. *Gronovii*, which was described by Gronovius (under the name of "CHAMÆSAURA BIPES," as follows, "A Scincus, having the posterior extremities very short, subulate, single toed, destitute of anterior feet; the tail almost as short as one half the body, cylindrical, with its extremity smooth, naked and conical, some black lines prolonged upon the back, and the flanks; the abdomen whitish: total length four inches. (*Zoophil.* No. 44. page 11.) On comparing this description with that of the "*sexilineata*," as above detailed, the latter will be found evidently a well characterized distinct species.

Description of a new Species of SCINCUS. *By* RICHARD HARLAN, M. D. *Read December* 21, 1824.

SCINCUS.

S. *bicolor*. Pl. xviii. fig. 1. Supra fuscus; subtus albido-argenteus; lineis duabus longitudinalibus albis in utroque latere; cauda, tereti, corpore paulolongiore; palmis, plantisque pentadactylis.

Total length, nine inches, four-tenths; length of the head, neck and body, four inches; length of the tail five inches four-tenths; length of the

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head, nine-tenths; breadth of the head, eight-tenths; length of the neck, six-tenths.

Body above dusky brown, darkest on the top of the head, which is swollen at the maxillary angles: *body* beneath of a silvery white throughout; a white line commencing at the occiput; on each side of the spine extends two or three inches on the tail; another line commencing at the tympanum and passing immediately above the thigh is lost on the tail; two faint longitudinal lines mark the posterior part of the thighs, the lowermost extending to the outer toe: *tail* tapering, cylindrical, and pointed: *tympanum* large, vertically oval; the palpebral and infraorbitar ridge, clothed with minute quadrangular plates or scales.

The genus SCINCUS, originally established by Brongniart, and adopted by Latreille, Daudin, and others, includes about twenty species; only two of which are said to inhabit the United States: viz. the S. *quinquelineata* and the S. *erythrocephalus;* to which must be added the species under consideration, which differs from the *erythrocephalus* described by Mr. Gilliams (Journal of the A. N. S. Vol. i.) in form, proportion, colour, and markings. Of all the species of this genus hitherto described, the *bicolor* approaches most nearly the S. *quadriliniatus*, (Daudin,) LACERTA *lineata* (Linn.) or L. *quadriliniata*, (Gmelin.) This reptile first described by Linné (from a specimen in the Museum of Prince Adolph Frederic,) is fur-

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nished with only four toes to the anterior extremities, which could not have been the result of accident, as Linné informs us he had observed several specimens of the same species; the total length of this species is represented as about four inches and a half; although it is marked by four white lines in common with the *bicolor*, these are differently arranged; in the "*quadriliniatus*," one line as white as snow, is prolonged from the extremity of the snout on each side of the back, as far as the base of the tail; another passes from the angle of the mouth, through the flanks to the thighs.

After this description there can be no danger of confounding the two. The reptile which forms the subject of this detail, is preserved in spirits in the Philadelphia Museum.

SCINCUS *erythrocephalus*. Gilliams. var. *Body* above of a dark green, approaching to black: *head* above of a reddish yellow: *body* beneath of a yellowish white; total length, eleven inches: *tail* a little longer than the body, round, and tapering; from the tip of the snout to the commencement of the hind legs, four inches and a half; length of the head, one inch and two-tenths; breadth of the head, one inch.

Two specimens in the Philadelphia Museum; being dried, their colours must have faded.

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On two genera and several species of CRINOIDEA.

By THOMAS SAY. *Read March 1st*, 1825.

I am indebted to the politeness and liberality of Dr. J. Bigsby, for the opportunity of describing the very interesting animal remains which form the subject of the following new genus.

Family CRINOIDEA.

CARYOCRINITES.

Generic character. Column cylindrical, perforated by a tubular alimentary canal: *pelvis* formed of four plates; costals six, supporting the scapulæ, from which the arms proceed.

In Miller's arrangement this genus will occupy a station in the division *Inarticulata*, between the genera CYATHOCRINITES and ACTINOCRINITES. It may be indicated by the following formula.

A. Pelvis of four plates.

A. Costal plates six.

a. Column not dilated.

o. Alimentary canal round.

§. Articulating surface of the columnar joints, radiated.

†. Auxiliary side arms cylindrical, and placed irregularly. *Genus* CARYOCRINITES.

1. Two of the costals hexagonal. *1st Sp. ornatus.*

2. One of the costals hexagonal. *2d Sp. loricatus.*

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Species.

1. C. *ornatus.* Costals, four pentagonal and two hexagonal.

Column inserted into a cavity at the base of the pelvis: *pelvis* rather large; two of the plates quadrangular, attenuated to the base, where they are truncated and a little recurved at the junction with the column; disks, particularly towards the base, granulated, with a distinct elevated interrupted line; two remaining plates pentangular, attenuated to the base, where they are truncated and a little recurved at the junction with the column; disk with elevated granules, and with two elevated interrupted lines, extending to the terminal angles: *costals*, four pentagonal and two hexagonal, all with elevated interrupted lines, radiating from the centre to the angles, with a series of truncated granules on each side, and a few granules in the intervening spaces; interscapulars, two hexagonal, situated immediately above the hexagonal costals: *scapulars* six pentagonal, the upper sides of which are more or less irregular by projecting a little between the scapulæ, all with prominent lines granulated, similar to those of the preceding: *arms* six: *capital plates* with a heptagonal one in the middle, surrounded by five hexagonal plates and two irregular ones at the mouth: *mouth* not prominent, situated on one side of the middle, a little within the line of the arms, closed

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by small valvular pieces, its inferior side resting on the superior angle of one of the scapulars.

Longitudinal diameter from three quarters to one inch and a half; transverse diameter from seven-tenths to one inch and two-fifths.

2. C. *loricatus*. Costals, five pentagonal, and one hexagonal.

Resembles the preceding, but there is only one hexagonal costal plate, and one interscapular plate.

Longitudinal diameter one inch and eleven-twentieths; transverse diameter one inch and three-tenths.

Dr. Bigsby obtained seven specimens of the *ornata*, and one of the *loricata*. He informs me that "they are found loose in brown clay at the foot of the ravine at Lockport, in which the New-York canal mounts the parallel ridge of Lake Ontario. They are extremely numerous, but almost always worn and crushed. They are filled with the clay in which they are imbedded. They are from one-tenth to one-eighth of an inch thick in their parietes. The clay rests upon horizontal, black, conchiferous limestone, in which I found part of an *encrinital* stomach, bearing a close, if not perfect resemblance to the CARYOCRINITES described by Mr. Say."

In the second volume of Silliman's Journal, p. 36, I instituted a new genus for the truly singular animal *reliquium*, which Parkinson called *Ken-*

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tucky Asterial fossil. I shall now proceed to correct the characters of that genus agreeably to the discoveries of the ingenious Miller, in this family, and to identify by name the species which I then indicated.

Pentremite.

Column cylindrical, perforated; segments articulating by radiated surfaces, with cylindrical side arms at irregular intervals: *pelvis* of three unequal pieces, two pentagonal and one quadragonal: *scapulæ* large, very profoundly emarginate for the reception of the tips of the radiating ambulacræ, obliquely truncated at the extremities, each side, for the reception of one side of a subrhomboidal plate or interscapular: *ambulacræ* five, radiating from the summit and terminating at the tips of the emarginations of the scapulæ; each with a longitudinal, indented line, and numerous transverse striæ which terminate in a marginal series of pores, for the transmission of respiratory tubes: *summit* with five rounded openings (ovaries) and an angulated central one (mouth and anus.)

This singular genus is so remotely allied to any other hitherto discovered, that I do not think it can with propriety, be referred to any Family yet instituted. By its columnar support it is related to the Family Crinoidea, but the total absence of arms and hands excludes it from that very natural

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group. The superior termination, in which the ambulacræ, the rounded openings, and the central angulated one, are situated, has some affinity to the Family Echinidea, but the columnar support shows that it cannot be arranged there.

Having thus on its inferior portion a resemblance to the Crinoidea, and on its superior surface a decided analogy to the Echinidea, I think it may with propriety form an intermediate family, under the following name and characters.

Family BLASTOIDEA.

Column composed of numerous articulating segments, supporting at its summit a number of plates, so united as to form a calyciform body containing the vicera; arms none; branchiæ arranged in ambulacræ.

In a natural series these bodies constitute the link between the Crinoidea and the Echinidea, on the one hand, whilst on the other, the former is unquestionably, but not more obviously, connected with the Stelleridica, by the unequivocal intervention of Comatula and Marsupites. Of all the genera of Crinoidea, it is to PLATYCRINITES that PENTREMITE seems most closely related.

Species.

1. P. *globosa.* Body subglobular; sutures with parallel impressed lines.

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Length one inch and one-fifth; greatest breadth one inch and three-tenths.

Description. *Pelvis* deep saucer-shaped, convex; longitudinal sutures without parallel lines of increment, but these are very obvious at the terminal margin: *scapulars* with the impressed lines of increment very obvious at base, and near the tip each side: *ambulacræ* with impressed lines equidistant between the central line and the lateral series of pores.

This large and fine species belongs to the Philadelphia Museum. It was brought from England by Mr. Reubens Peale, who understood that it was found in the vicinity of Bath. None of this species, I believe, has yet been found in America. The parallel lines of increment margining the sutures, distinguish this from the following species.

2. P. *pyriformis*. Body oblong, pelvis gradually attenuated.

Length from three quarters to one inch and a quarter.

This species is found in plenty in Kentucky, in the same localities, and intimately intermixed with the succeeding species; it may be readily distinguished by the gradual attenuation of the pelvis and contiguous parts, from the tips of the emarginations of the scapulæ, to the origin of the column. The first specimen I saw, was dug up in a garden at Reading, and was sent to my brother, B. Say, under the name of "petrified althea bud."

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3. P. *florealis*, Schloth. Pelvis terminating abruptly, nearly horizontal.

Length from seven-tenths to nearly half an inch.

SYNONYMES.

Kentucky Asterial Fossil, PARK. ORG. REM. v. 2, *pl.* 13.

ENCRINITES *florealis*, SCHLOTH. petrif. (as quoted by Miller.)

This is extremely abundant in many parts of Kentucky, and on the margins of the Mississippi in a few places. Near Huntsville they are very numerous, and on the surface of a fragment of rock, three inches long, by two and a quarter wide, sent to the Academy by Mr. Hazard, of that place, I have enumerated eighteen specimens of this species more or less entire, and two specimens of the preceding species. On another still smaller piece of rock are twenty-one specimens, all in alto-relievo, two of which are of the preceding species. On a third fragment of rock, thirty may be counted, and on a fourth upwards of fifty.

That these animals were pedunculated and fixed, there cannot be any doubt. We see at the base of the pelvis a small rounded surface, perforated in the centre for the passage of the alimentary canal, and on the outer margin are very short but distinct radii of elevated lines, evidently intended for articulation with the first joint of the column. The column itself is always found in fragments accompanying the body of the animal, but never attached to it.

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I think it highly probable that the branchial apparatus communicated with the surrounding fluid through the pores of the ambulacræ, by means of filamentous processes; these may also have performed the office of tentacula in conveying the food to the mouth, which was, perhaps, provided with an exsertile proboscis; or may we not rather suppose that the animal fed on the minute beings that abounded in the sea water, and that it obtained them in the manner of the ASCIDIA, and by taking them in with the water. The residuum of digestion appears to have been rejected through the mouth.

Description of two new Species of AGAMA. *By* R. HARLAN, M. D. *Read December* 21, 1824.

AGAMA.

1. A. *vultuosa.* Pl. xix. Corpore passim cinereo; collo subtus longitudinaliter plicato; cauda tereti longa; squamis rhomboideis, carinatis; dorso, antice, capiteque postice, subcristatis.

Total length nine inches and eight-tenths; from the commencement of the snout to the posterior extremities two inches and eight-tenths; length of the tail seven inches; length of the jaws nine-tenths. Top of the head clothed with numerous small smooth scales reversely imbricate; tympanum large, elliptical; two or three small spines

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pointing backwards, immediately above and behind the ears; eyes large; palpebræ circular, depressed, clothed with minute granuliform scales; a fold of skin projecting laterally, commences at the nostrils and extends over the superior portions of the orbits, which gives the animal a supercilious, frowning aspect; the scales on the longitudinal fold beneath the throat, have their inferior borders slightly elevated; a crest formed of lanceolate, thin, elevated and pointed scales, commencing on the occiput, becomes gradually obsolete about the middle of the back, being most prominent on the nucha, one large scale in the centre of the occiput at the commencement of the crest. The two middle toes of the hind feet very long, the nails are compressed, hooked, and black on their upper surface; scales of the lower surface of the body less prominently carinated; tail more than twice the length of the body.

The genus AGAMA, originally established by Brongniart and Latreille, from the Iguana and Stellion, is divided into five sections, to which may be added the "AGAMA *collaris*," Say, described in Major Long's expedition to the Rocky Mountains, which can be referred only to Daudin's fourth section, or "les Agames lézardets," the Agamas of this section having like the lizards, plates on the head, and a row of porous grains under each thigh: one species only has hitherto been described as pertaining to this section: viz.

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AGAMA *marmorata*, Daud. The *collaris* is still more nearly allied to the lizards, being entirely destitute of carina, even to the end of the tail.

The very beautiful little animal which forms the subject of the present description, belongs evidently to the *second section* of Daudin, or the Agama's, properly so called, which includes eleven distinct species; "they all have the skin covered with small scales, without any appearance of warts, with the body spare, and the tail cylindrical, elongated."

To neither of the species hitherto described, can the present subject be referred; it approaches in some respects the AGAMA *calotis*, Daud. or the L. *calotis*, Linn. from which, nevertheless, it is separated by several important particulars; among others, by the absence of lateral stripes, by the difference in the form and size of the dorsal crest; by the spines behind the ears; the form of the eye; the presence of the superciliary ridges, and longitudinal fold of skin beneath the throat, &c. Our species most nearly resembles the AGAMA *colonorum*, Daudin, or the L. *agama*, Linn. which inhabits the West Indies, from which, however, it is distinguished by the colour, which is bluish in A. *colonorum*, "Colore pallide cærules sub-virescente;" by the form of the head, which is thick and clumsy in the last mentioned species, and beautifully proportioned in the *vul-*

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tuosa; by the form of the scales on the back of the head and neck, which are thin, elongated and prickled over with small spines, "Collo supra capitique postice aculeatis;" by the absence of spines behind the ears in the *colonorum*, and in the proportional length of the tail, which is only half the total length in the last named species, which differs also from the present species in the form of the dorsal crest and scales; the latter are roughened by tubercles prickled over with very little spines.*

For the opportunity of making the above observations, I am indebted to the politeness of Dr. R. Coates, who lately brought the specimen from Calcutta, in the neighbourhood of which city this reptile abounds; it for the most part frequents gardens. The specimen is preserved in spirits.

2. A. *cornuta.* Pl. xx. Corpore depresso ovato, scabro; supra, fusco-variegato; subtus albido; capite supra quadrangulare; cauda corpore sesquibreviore.

Total length four inches; length of the tail one inch five-tenths; length of the head six-tenths; breadth between the eyes five-tenths; length of the body from the nucha to the posterior part of

* Cuvier, in his Règne animal, has constructed the genus CALOTES, from the genus AGAMA of Daudin, among which he would most probably include the *vultuosa*, but as this species, with the exception of the dorsal crest, corresponds with the AGAMA's, I prefer classing it with the latter.

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the thighs, two inches; greatest breadth one inch. The form of the body is nearly elliptical, flattened vertically, and umbilicate at the sides, covered over above with minute scales of various lengths and irregular forms; their inferior borders pointing outwards, giving a prickly, scabrous appearance, as if shagreened; a groove commences at the nucha and runs the whole length of the spine, becoming obsolete on the base of the tail; the sides of this groove are formed by slightly elevated scales; the bottom of very minute scales compactly imbricate; sides of the body furnished with a whitish fringe, commencing immediately above the axillæ, and extending to the flanks; a smaller one immediately beneath, running parallel, between the anterior and posterior extremities, separating the back from the abdomen; the scales on the abdomen, rhomboidal, small, imbricate, and disposed in transverse rows; the breast and exterior of the thighs and legs, clothed with oblong, carinate scales, with their inferior borders elevated and pointed; scales on the interior of the legs and thighs minute, compactly imbricate, and for the most part not carinate; head flattened on top between the eyes; a slightly projecting ridge over the orbits, lined with five or six small, oblong plates; top of the head clothed with minute verrucose plates, (or scales not imbricate;) snout rapidly attenuated, forming with the top of the head an acute angle; occiput descending backwards

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from the vertex, forms an oblique angle with the top of the head; occiput flattened laterally and posteriorly, forming a ridge which projects over the neck, the posterior margin of which is furnished with from four to six spines or horns, from one to three-tenths of an inch in length; scales on the occiput of a pyramidal form: *ear* placed beneath the occipital ridge, directly posterior to the angle of the mouth; teeth small, pyramidal, flattened laterally and pointed: *eye* large; borders of the lower jaw serrated, with six corneous, approximate scales, projecting obliquely backwards: *tail* about one half the length of the remainder of the body, thick and depressed, or flattened at its base, rapidly attenuating, becomes tapering and verticillate at its extremity.

The very interesting little reptile which forms the subject of this description, differs remarkably from any hitherto described. It approaches nearest the AGAMA *orbicularis*, Daud. or the LACERTA *orbicularis*, Linn. the *Tapayaxin* of Seba, who has given three figures of this species; (Thes. vol. i. Pl. G. ix. fig. 6. Pl. 83. fig. 1st and 2nd.) That figured by Daudin, *Hist. Nat. des Reptiles*, from a specimen in the Museum of Nat. Hist. at Paris, appears to differ, as it wants the row of spines on the back. He represents it as the ugliest reptile hitherto known, on account of its squat body, being nearly as broad as it is long, terminated by a short, slender, and pointed tail. The

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animal figured by Seba, is represented as six inches in total length, the tail being two inches six lines.

The A. *cornuta* on the contrary, is elegantly proportioned; its beauty indeed is such as to attract the attention and excite the admiration of the most superficial observer. I consider it unnecessary to enter into any further detail, in order to discriminate this species from that to which it is most nearly allied; it will be sufficient to contrast the above with the figures of Seba, and with the description and figure by Daudin: the specific characters are so striking as to be perceptible at the first glance.*

* For the convenience of those who may not have it in their power to refer to the authors above quoted, I shall barely notice some of the most prominent specific peculiarities of the *cornuta*.

According to Daudin and Brongniart, *generic* characters must be drawn principally from the organs of motion, taste, and touch; that is to say, they ought to consist in the form and disposition of the extremities and their phalanges of the scales, and of the tongue, as well as in the form of the tail: agreeably to this definition of *generic characters*, it will be observed, that it requires some constraint to class the AGAMA *cornuta* with even the *orbicular* lizards.

1st, The *cornuta* differs entirely from all other lizards in external form and proportion of the body in general, and of the head and tail in particular; and this in despite of all errors from stuffing, or from difference of age, my description having been drawn from three specimens, two perfectly

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The AGAMA *cornuta* inhabits the great plains east of the Rocky Mountains; possessed in some degree of the power of changing their colour, in-

prepared; the third a very large one, not stuffed; the individual having died, and having been merely dried in the sun, I have been informed that there are two specimens of the same animal in the Baltimore Museum. 2d, it differs from the species most nearly allied in the proportional length of the tail, which is nearly twice the length of the body, in the *orbicularis*, and one half the length of the body in the *cornuta*, gradually tapering from the root to the point, in the first named species; flattened and enlarged at the base, and rapidly attenuated in the latter. 3d, in the presence of two rows of fringes on the sides of the body in the *cornuta*. 4th, in the longitudinal dorsal groove. 5th, in the large horns with which the *cornuta* is furnished, there being only small spines in the *orbicularis*. 6th, in the flattened borders of the occiput which projects over the neck of the latter. 7th, in the form of the head, position of the nostrils, and in the angles formed by the frontal and occipital surfaces, with the top of the head, as well as in other less remarkable traits. Any one of the above named characters would be sufficient to establish a new species. The fact is, the AGAMA *cornuta* differs as much from either of the eight orbicular lizards described by Daudin, as any two species of any genus differ from one another.

The reptile described under the name of "Tepayaxin," by Hernandez, (*Hist. of New Spain*) and that figured and described under the same name by *Clavigero*, (*Hist. of Mexico*, vol. i. p. 66) is, in reality, a distinct species from the AGAMA *orbicularis*, (Daud.) or the Tapayaxin of Seba, and yet perfectly distinct from the A. *cornuta*.

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dividuals of the same species will, of course, differ in this circumstance; of the two prepared specimens of this animal deposited in the Philadelphia Museum from the plains of Arkansas, one is rather larger than the other, and possessed of longer horns, but no *specific* difference is observable. A single specimen only, is perfectly prepared by Mr. Griffith.

Many years ago, Mr. Thomas Jefferson presented to the Amer. Philos. Soc. a beautiful living specimen of this animal, on comparing which to the present species, a perfect resemblance was observable, excepting that the former had lost part of its tail.

Clavigero thus describes his lizard. "It is remarkable for its shape, being perfectly round and cartilaginous; the body is six inches in diameter; in the plate it is represented with a *ridge* along the spine, with six transverse bands on the back; eight spines on the occiput; "the head is hard, and spotted with various colours;" the tail is yet shorter in proportion than that of the *cornuta*.

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An account of a new Species of the genus ARVICOLA.

By GEORGE ORD. *Read March* 8, 1825.

ARVICOLA.

A. *riparius.* Snout thick, obtuse; eyes small; ears of a medium size; tail less than half the length of the body.

Head large: *ears* almost concealed by the long hair of the cheeks, roundish: *tail* thinly covered with hair, and tufted or penciled at the tip, subquadrangular after death: *fore legs* very short; posterior part of the *body* slenderer and weaker than the anterior part: *upper parts* a tawny brown, mixed with black: *lower parts* cinereous.

Length from the nose to the anus, five inches; length of the tail two inches; weight about one ounce and one-fifth.

The tail of the male is longer than that of the female.

The female has four pectoral, and four abdominal, teats; she brings forth eight young at a litter.

This species is fond of the seeds of the wild oats, ZIZANIA *aquatica;* and is found in the autumn, in those fresh water marshes which are frequented by the common rail, the GALLINULA *carolina* of Latham. When the tide is high, the animal may be observed sitting upon the fallen reeds, patiently waiting for the recession of the water. From

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its position when at rest, it has much the appearance of a lump of mud, and is commonly mistaken for such by those who are unacquainted with its habits.

It burrows into the imbankments of the meadows, for the purpose of retreat, and to bring forth its young. It is a pretty skilful diver.

I have deposited specimens of this ARVICOLA in the Philadelphia Museum.

Description of a new Species of SALAMANDER. *By* WILLIAM W. WOOD. *Read February* 8, 1825.

SALAMANDRA.

S. *punctatissima.* Grayish, entirely covered with numerous black dots; extremities long and slender; tail a little longer than the body.

Head oval, little wider than the body: *snout* obtusely rounded, about twice as long as the longitudinal diameter of the eye: *nostrils* small, approximate: *gape* large: *jaws* nearly equal: *tongue* thick, fleshy: *teeth* minute, close set; angle of the mouth extending nearly to the posterior canthus of the eye: *eyes* large, oval: *throat* with sparse dots of black: *body* slender, grayish, covered with small black dots, which increase in size and become confluent upon the back, disposed irregularly: *back* slightly carinate, the carina not acute and scalloped; extremities slender, and covered

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with black dots similar to those on the body: *toes* slender, also spotted with black: *tail* with the carina above, and that on its inferior edge, somewhat scalloped, slightly dotted with black, a little longer than the body, slender and subacuminate at the extremity: *anus* large: *beneath*, spots rather sparse on the throat, numerous on the venter.

Native place unknown.

I am indebted to Mr. Rubens Peale for this species.

Length of the body one inch and a quarter; length of the tail two inches one-eighth; length of the head three-eighths; length of the anterior feet three-fifths; length of the posterior feet rather more than three-fifths of an inch. Total length three inches and three-fourths; width of the head five-sixteenths of an inch.

Descriptions of new HEMIPTEROUS INSECTS *collected in the Expedition to the Rocky Mountains, performed by order of Mr. Calhoun, Secretary of War, under command of Major Long. By* THOMAS SAY. *Read June* 1, 1824.

GRYLLUS *Fabr.*

1. G. *equalis.* Hemelytra spotted with brown; wings pale yellowish at base, with a black band and dusky tip.

Inhabits the United States.

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Head varied with brown and light gray: *thorax* varied with brown and dull rufous, with a carinate line: *hemelytra* dark cinereous, with numerous unequal small dark brown spots: *wings* sulphurous at base, then a black band arcuated behind so as nearly to reach the inner angle; tip dark cinereous, darker at the angle, or with small fuscous spots on that part: *feet* pale cinereous, spotted with fuscous: *hind thighs* within with four black bands: *posterior tibiæ* sanguineous.

Length to the tip of the hemelytra, one inch and two-fifths.

Not an uncommon species. The thorax is not gradually raised into a carina, but the line is abrupt and of little elevation.

2. G. *nubilus*. Black; wings glaucous.

Inhabits Arkansa.

Head with the frontal line not grooved: *thorax* with a slightly and equally elevated line: *hemelytra* rather short: *feet* dusky, tinged with dull rufous: *posterior pair* black, the thighs with a whitish annulation near the tip: *beneath* pale.

Found in abundance near the base of the Rocky Mountains, in company with the succeeding, and like it ascending into the atmosphere in great numbers.

3. G. *bivittatus*. A yellowish line each side above from the front to the tip of the hemelytra.

Inhabits Arkansa

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Mouth white; superior orbits yellowish: *thorax* with an elevated capillary line, and three transverse impressed ones, a yellowish marginal line each side: *hemelytra* with small dusky spots each side, above margined with greenish yellow: *wings* pale green: *feet* pale, anterior and intermediate thighs somewhat arcuated, with a green line; posterior thighs with a green line on the exterior side and another above, which is faintly marked by two pale spots near the middle, a dusky annulation near the tip; posterior tibia green, pale towards the tip, and on the anterior side: *abdomen* pale with minute dusky spots; segments margined with dusky.

Length to the tip of the hemelytra one inch and three-tenths.

This species, with several others, occurred in great numbers near the mountains, and on one occasion we observed this species in company with several others, ascending to a great height in the air as if to commence a migration to a remote region.

Acheta. *Fabr. Leach.*

A. *exigua.* Head and thorax testaceous; feet whitish; abdomen black.

Inhabits Missouri.

Head testaceous, hairy, with obsolete dusky lines above, contracted before the eyes into a

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short, obtuse, conical process: *front* vertical, trilineate, lines fuscous, connivant at the mouth: *antennæ* long, fuscous, pale at base: *palpi* white: *thorax* testaceous, hairy: *hemelytra* yellowish-white, right one entirely concealing the other: *nervures* (male,) with but few anastomoses, at tip enclosing a large, oval, rugose, but membraneous space: *feet* whitish; posterior thighs with a brown line on the exterior side; posterior tibia with three pairs of alternate spines, and larger ones at tip: *abdomen* black.

Length about a quarter of an inch. A male.

Taken near the village of the Konza Indians. When dry, the head and thorax assume a light ferruginous colour.

Tridactylus. *Oliv.*

T. *apicialis.* Black, varied with white; wings edged and tipped with blackish.

Inhabits southern and Western states.

Body deep black: *head* with a line each side, passing over the eyes, two spots at the superior base, and a line on the vertex furcate before, whitish: *thorax* margin and several abbreviated lines on the disk, white: *feet* banded and spotted with white, posterior thighs trifasciate with white; posterior tibiæ nearly rectilinear: *elytra*, exterior margin and common spot behind the middle, white: *tergum* fasciate with white.

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Length more than one-fifth of an inch.

This species is numerous on St. John's river, in East Florida and on the Missouri, as far as Council Bluff. It is always found on the moist shores not far distant from the water's edge.

Pentatoma. *Oliv. Latr.*

1. P. *arborea.* Brownish-cinereous, punctured; clypeus emarginate and bidentate; thorax dentate and with a prominent truncated spine behind each side; feet annulate.

Inhabits Missouri.

Body brownish-cinereous, with numerous black punctures: *head* with a longitudinal obsolete elevated line, and an abbreviated one each side of its middle: *clypeus* emarginate at tip, lateral edge terminating in an angle near the tip: *antennæ*, base of the second joint pale: *thorax* unequal before, dentated each side; teeth irregular, unequal, acute; posterior angles extended into a prominent, dilated, slightly reflected, truncated projection, which has two or three small teeth: *hemelytra* with the central nervure conspicuous; nervures of the membranaceous tip black, and with black arborescent lines in the interstitial spaces: *wings* dusky, iridescent; nervures black: *feet* black: *thighs* pale at base and annulate with pale near the tip: *tibia* annulate with pale: *tarsi*, second joint pale: *tergum* deep purple, black, impunc-

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tured; margin brownish-cinereous, punctured, varied with transverse abbreviated black lines placed triangularly, and pale: *venter* pale, pruinous, with dusky points: *stigmata* each composed of three distinct black points placed obliquely: *pectus* and *pospectus* pale, dusky each side.

Length less than three-fifths of an inch.

A common species, and seems to approach *Halys annulata* Fabr. but it does not, in all respects, agree with the description of that species.

2. P. *clanda*. Pale yellowish; thorax with two spots, hemelytra and scutel with a line, black.

Inhabits Missouri.

Head densely punctured, rufous, blackish at base: *antennæ* rufous, blackish at tip: *thorax* pale yellow, with two large transverse brown spots, posterior margin brown; posterior angles not prominent: *scutel* pale yellow, with a broad brown line, bifid before: *hemelytra* pale yellow on the basal portion with a brown line and inner edge; tip blackish: *beneath* pale yellow: *feet* rufous: *tibiæ* with a yellowish annulus: *venter* with two series of black spots, and on each side a brown vitta; ultimate segment with only three spots.

Length two-fifths of an inch.

Var. a. Spots and lines of the upper surface, black; venter with six series of black spots.

Var. b. Sanguineous; head, two spots, and posterior margin of the thorax, disk of the scutel,

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hemelytra, pectus and feet, black; venter with six series of black spots.

Var. c. Sanguineous; head, two spots and posterior margin of the thorax, disk of the scutel, hemelytra, pectus and feet, black; venter black on the disk.

A handsome species, subject to much variation.

3. P. *exapta.* Sanguineous; thorax with a black line; scutel black with a yellow margin.

Inhabits Missouri.

Head at base and *antennæ*, black: *thorax* with a transverse black line before the middle; posterior angles rounded, not prominent: *scutel* black, with a yellow margin, excepting at base: *tergum* blackish, with a rufous margin: *hemelytra* black, exterior basal margin yellow: *pectus* more or less varied with black: *tibiæ* black.

Length about a quarter of an inch.

4. P. *punctipes.* Pale olivaceous; thorax bilineate transversely with white; scutel black, with a white margin.

Inhabits the United States.

Head black: *antennæ* pale at base, and somewhat biannulate with whitish: *proboscis* white: *thorax* blackish before; a slender, transverse, abbreviated white line on the anterior submargin; anterior and lateral edges white, the former abbreviated; posterior angles rounded, not prominent: *scutel*, lateral and terminal narrow margins

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white: *hemelytra* with the exterior basal narrow margin whitish: *tergum* black: *beneath* blackish-cupreous: *feet* white, with black points: *venter*, margined with white.

Length from one-fifth to one-fourth of an inch.

A common species, inhabiting almost all parts of the Union, and may be frequently observed on the mullin.

5. P. *punctipes*. Greenish-yellow, punctured; thorax with prominent angles each side, behind; membranaceous tip of the hemelytra with brown dots; feet with black points.

Inhabits the United States.

Body greenish-yellow, punctured: *clypeus* slightly biemarginate at tip, small spot above the eyes impunctured: *antennæ* pale, penultimate joint at tip and ultimate one black: *rostellum* nearly attaining the base of the posterior feet, with a longitudinal black line and tip: *thorax*, anterior lateral edge dentate; teeth minute, subequal; behind the middle each side extending into a prominent, subacute angle: *scutel* destitute of elevated lines, rather paler at tip: *hemelytra* upon the membranaceous tip punctured with brown, punctures orbicular, numerous: *wings* whitish, iridescent; brachial nervure fuscous, black towards the base, *feet* with numerous black points: *tergum* deep black, margin greenish-yellow, with gemminate, black, dilated lines, which unite with the colour of the disk, but do not attain the edge.

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Length half an inch.

Not uncommon in Missouri and in Pennsylvania, and resembles P. *ictericus*, Fabr.

6. P. *faceta*. Green, with a pale fulvous margin and longitudinal line.

Inhabits Missouri.

Body oval, green: *head* entire before: *antennæ*, excepting the first joint, dusky: *thorax* with a pale fulvous lateral margin and fulvous edge; a longitudinal pale fulvous line in the middle; posterior angles rounded, not prominent: *scutel* not abruptly contracted in any part, with a longitudinal pale fulvous line on the middle: *hemelytra* with a pale fulvous lateral margin and deep fulvous edge: *tergum* blackish, with a fulvous margin.

Length nine-twentieths of an inch.

Cydnus, *Fabr.*

1. C. *bilineatus*. Black, polished, with sparse lateral hairs; tarsi dull testaceous.

Inhabits the United States.

Body deep black, polished: *head* with two longitudinal, parallel, approximate, indented lines, abbreviated at the vertex, the intermediate space somewhat resembling a carina; lateral margin with sparse black hairs: *clypeus* subentire, or obsoletely emarginate at tip: *antennæ* and *rostellum* piceous: *thorax* a little narrowed before by a slightly arcuated lateral edge: *lateral margin*

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sparsely hirsute; an indented transverse line on the middle: *posterior margin* somewhat convex, edge slightly arcuated: *scutel* large, remotely punctured: *hemelytra* densely coriaceous at base, membranaceous tip white or pale brownish: *wings* pale: *feet* spinous, piceous-black: *anterior tibiæ* compressed, ciliated with spines; posterior pairs irregularly spinous: *tarsi* dark testaceous.

Length from three-tenths to two-fifths of an inch.

Not uncommon in Pennsylvania as well as in Missouri.

2. C. *spinifrons.* Dark reddish-brown; clypeus ciliate with spines; anterior thighs with an oblique, linear, emarginate spine.

Inhabits Missouri.

Body dark reddish-brown, punctured: *clypeus* armed on the edge with erect, equidistant, prominent spines: *antennæ* pale reddish-brown, second joint minute: *thorax* with dilated punctures, obsolete on the anterior disk, a transverse indented line on the middle, lateral edge with a few hairs: *scutel* nearly as long as the thorax, punctures dilated, tip acute: *hemelytra* reddish-brown, punctures approximate, membranaceous tip white: *feet* pale reddish-brown: *anterior thighs* with an oblique, robust, linear, emarginate process near the middle beneath, and a small, robust spine near the tip; tibiæ with prominent rigid spines on the exterior edge; *intermediate thighs* mutic, tibiæ armed with

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moveable spines: *posterior thighs* with a slightly flexuose spine near the tip beneath, and two or three small tubercles at tip; tibiæ armed with a few moveable spines: *postspectus* blackish.

Length three-twentieths of an inch.

Found near Engineer Cantonment, common.

Coreus, *Fabr.*

1. C. *alternatus.* Fuscous; thighs spinous beneath; margin of the abdomen black, with five white lineolar spots; head mutic.

Inhabits Missouri Territory.

Body deep blackish-brown: *eyes* rufous, a moveable black pupil: *stemmata* sanguineous: *antennæ* blackish, robust, two terminal joints rufous, equal: *rostellum* pale, tip black: *thorax* punctured, gradually elevated behind, attenuated before, anterior termination as wide as the base of the head, anterior lateral edge slightly dentate, posterior angles rounded: *scutel* of the male tinged with rufous: *hemelytra* tinged with rufous, punctured: *feet* black: *tarsi* rufous: *thighs*, a double series of hardly prominent, robust spines beneath, of which the two opposite terminal ones are much more prominent, distinct, and acute: *abdomen*, margin black, alternating, with five, oblique, white lines: *tergum*, disk sanguineous: *male*, *posterior thighs* much dilated, very robust, slightly tuberculated above, terminal spines not more prominent than the

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others, a large prominent spine on the inferior middle: *posterior tibiæ* dentate towards the tip, refracted in the middle, and with a robust, prominent acute spine on the angle.

Length of the male more than four-fifths of an inch; female nearly three quarters.

Somewhat similar to C. *galeatus*, Fabr. but is considerably larger, the head is unarmed, and in other respects sufficiently distinct. It belongs to the genus Mictis of Leach.

2. C. *ordinatus*. Head fulvous, with two black lines; thorax with the lateral edges fulvous.

Inhabits the United States.

Head dull fulvous, with two broad, black, longitudinal lines: *antennæ* fuscous: *thorax* dull fulvous, with numerous, irregularly disposed black punctures, lateral narrow margin fulvous, and with an obsolete interrupted or abbreviated dull fulvous line in the middle; posterior angles rounded, not prominent; posterior margin a little depressed: *scutel* coloured and punctured like the thorax: *hemelytra* also dull fulvous, with numerous black punctures irregularly disposed; membranaceous portion black: *tergum* on the lateral margin black, the segments fulvous at base: *beneath* pale fulvous, with a few black punctures: *feet* with numerous black points.

Length three-fifths of an inch.

This is one of the most common of our species; when taken it diffuses an odour which has been

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compared to that of a ripe pear. I have found it in Pennsylvania, Missouri, and Florida.

3. C. *armigerus*. Brown, feet white, spotted with black; head spinous above the antennæ; margin of the tergum black, with five white lineolar spots.

Inhabits Missouri Territory.

Body brown above, beneath pale: *eyes* prominent, rufous: *stemmata* sanguineous; above the origin of each antenna, an elevated, prominent, acute spine, half as long as the basal joint of the antenna: *antennæ*, first joint white, spotted with black, second and third black, white at base and tip, terminal joint rufous: *thorax* punctured, elevated behind, descending almost vertically and attenuating to the head; anterior lateral edge dentate, posterior angles dilated and terminated in an angle, from whence the posterior margin descends sinuously and obliquely, terminating in a short acute spine each side of the base; base transversely rectilinear: *scutel* with three black spots at base: *hemelytra*, a white oblique line in the middle on the membranaceous portion; tip blackish: *feet* white, spotted with black: *thighs* armed at tip beneath, with two short acute spines: *tergum* sanguineous, base, tip, and margin black, the latter with five white oblique lines: *venter* pale, spotted with black.

Length of the female eleven-twentieths of an inch.

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I have not yet seen the male of this species, it bears a general resemblance to C. *galeatus*, Fabr. and is about equal to that species in magnitude, but it may be at once distinguished by the white transverse line at the base of the membranaceous portion of the hemelytra.

4. C. *lateralis*. Pale reddish-brown, punctured; hemelytra with spotted nervures; feet pale, spotted.

Inhabits the United States.

Body somewhat hairy, pale reddish-brown, with much dilated approximate punctures: *head* somewhat unequal, two obsolete impressed lines between the antennæ, a blackish spot behind the eye: *eyes* dusky, pale before: *antennæ* brownish, with sparse hairs; terminal joint as long as the preceding one, dilated, with cinereous pubescence: *thorax* with three obsolete dusky spots before, and an impunctured whitish line abbreviated before; *scutel* with a longitudinal, impunctured whitish line: *hemelytra*, nervures with black spots, interstitial spaces membranaceous; membranaceous tip immaculate, whitish: *beneath* with a distinct lateral red line: *feet* hairy, pale; thighs spotted with reddish-brown; *pectus* rufous: *venter* yellowish or rufous.

Length more than a quarter of an inch.

Found near Engineer Cantonment, and is not uncommon in Pennsylvania.

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Lygæus. *Fabr. Latr.*

1. L. *reclivatus.* Black, spot on the vertex, three on the thorax and reclivate line on the hemelytra, red; a geminate white spot near the hemelytra.

Inhabits Missouri.

Body black, opaque, with a somewhat cinereous shade: *head* with a rufous spot on the vertex: *thorax* unarmed, with an obsolete, indented, transverse, punctured line before; three rufous spots behind the middle, inner spot not attaining the base, outer spot marginal extending from near the middle of the edge, to the posterior angle, and separated from the intermediate spot by a small velvet black one: *scutel* a little elevated on the basal disk: *hemelytra* with a rufous, somewhat reclivate line from the humeral angle to the tip of the coriaceous portion, a velvet black spot on the middle, and a minute one at the inner basal angle; membranaceous portion deep black, polished; a large rounded geminate spot in the middle edge, and two small subtriangular ones at base, white: *venter* rosaceous, a double series of spots beneath, and one series each side, black.

Length rather more than two-fifths of an inch.

Resembles L. *turcicus*, Fabr. but is at once distinguishable by the large white spot on the membranous moiety of the hemelytra, which is pre-

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cisely similar to that on the corresponding portion of the hemelytra of L. *punctum*, Fabr.

2. L. *trivittatus*. Black, thorax trilineate, and hemelytra marginate with rufous.

Inhabits Missouri.

Body black: *eyes* and *stemmata* sanguineous: *thorax* mutic; two indented transverse lines near the head, of which the anterior one is curved in the middle; three bright rufous lines, of which two are marginal; posterior edge obscurely rufous: *hemelytra*, coriaceous portion with a rufous exterior and posterior margin, membranaceous tip immaculate: *trochanters* rufous: *tergum* rufous with three lateral black punctures: *venter*, margin and middle rufous.

Length nine-twentieths of an inch.

Taken at Engineer Cantonment.

3. L. *bicrucis*. Red; head, feet, anterior part of the thorax and tips of the hemelytra, black; inner edges of the hemelytra forming a yellow cruciate mark.

Inhabits the United States.

Body red: *head* black: *stemmata* remote, inserted near the eyes; projections for the reception of the haustellum, whitish: *thorax* mutic, posterior angles rounded, not sallient, a large transversely oblong-quadrate black spot before the middle, not attaining the anterior or lateral edges, partially interrupted in its middle by a reddish

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subcruciate line; posterior edge yellowish: *scutel* black, an indented, large, triangular, paler spot each side on the disk: *hemelytra*, membranaceous tip black with a whitish edge; coriaceous portion red with a lineolar yellowish margin, which on the costal edge becomes red towards the humerus, inner submargin and edge with a black line: *pectus* and *postpectus* black, segments broadly margined with pale: *feet* black: *stigmata* and *anus* black.

Length about seven-twentieths of an inch.

Sometimes occurs in Missouri; I have also received a specimen from Mr. A. G. Oemler of Savannah, Georgia.

4. L. *5-spinosus*. Obscure rufous; posterior thighs five-spined; tergum red, margin lineate with black.

Inhabits the United States.

Body dull rufous, minutely and densely punctured: *head* triangular: *stemmata* sanguineous: *antennæ*, second and third joints black at their extreme tip, fourth joint dusky, pale at base: *rostellum* pale, black at tip; setæ black: *thorax* obsoletely indented longitudinally in the middle and transversely before the middle; posterior angles sallient, acute, blackish at tip: *scutel* pale at tip: *feet* pale rufous, whitish at base: *posterior thighs* more robust, rufous at tip, five spined beneath: *pectus*, *postpectus* and *head* beneath, black in the

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middle: *tergum* red: *margin* with about four pale spots, and black lineolar edges to its segments.

Length of the body more than half an inch.

5. L. *eurinus.* Blackish, hairy, punctured; tergum black, disk rufous, margin with four yellowish spots; posterior thighs three-spined.

Inhabits Missouri and Arkansa.

Body blackish, hairy, punctured: *head* triangular: *eyes* prominent: *antennæ*, second and third joints dull testaceous, blackish at their tips: *thorax* densely punctured, mutic: *hemelytra* black-brown: *feet* black: *tibiæ* and *first joint of the tarsi*, dull testaceous, with black tips: *posterior thighs* three-spined beneath, and one or two smaller spines at tip: *abdomen*, reflexed margin with four yellowish spots: *tergum* rufous on the basal disk.

Length about half an inch.

The body of this insect as well as the preceding, is long and narrow, the diameter of the head which passes through the eyes is but little shorter than the breadth of the thorax.

Acanthia, *Latr.*

A. *interstitialis.* Black, hemelytra with a few whitish spots, tip whitish with black nervures and spots.

Inhabits Missouri.

Body leaping, black-brown, with short yellowish hairs: *eyes* large, deep castaneous, whitish at

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the anterior base: *stemmata* reddish-yellow: *clypeus* and *labrum* whitish: *hemelytra* deep black, with distant, very short yellowish hairs at base, four or five hyaline whitish spots on each hemelytron; middle of the tip of the coriaceous portion hyaline, membranaceous tip hyaline, nervures deep black, with a blackish oblong-quadrate spot between each pair; margin dusky, with a black spot at the exterior tip: *feet* pale before and black behind: *tibiæ* somewhat annulate: *wings* white.

Length more than three-twentieths of an inch.

Not uncommon on the shore of the Missouri river, skipping nimbly about.

Tingis.

T. *oblonga.* Head with three elongated acute spines; nervures brown; exterior margin of the hemelytra white.

Inhabits Missouri.

Body elongate, narrow, whitish: *head* with three elongate, linear acute spines, of which two are above the antennæ, and one between them: *eyes* black: *antennæ* testaceous, terminal joint blackish: *thorax* and *scutel* conjunctly, black in the middle; three elevated white lines and reflected margin; a much elevated, acute crest at the anterior termination of the intermediate line: *hemelytra*, a double slightly elevated line, confluent at tip and at base, and including a small blackish dot;

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nervures of the tip and inner margin black-brown; exterior margin white immaculate: *pectus*, *post-pectus* and *venter* black: *feet* pale testaceous.

Length nearly one-eighth of an inch.

Aradus, *Fabr.*

A. *quadrilineatus*. Brown; antennæ robust; clypeus trifid; thorax quadrilineate, edges irregularly and minutely dentate.

Inhabits Missouri.

Body dull light brown, opaque: *head* with two longitudinal indented lines, and two small indented black spots between the eyes: *clypeus* trifid at tip, intermediate division longest, obtuse at tip, exterior divisions acute at tip, hardly attaining the base of the second joint of the antennæ: *eyes* very prominent: *antennæ* robust, two terminal joints darker, ultimate one shorter and less dilated than the preceding one: *thorax* transversely oblong-oval; four elevated, parallel, equidistant, longitudinal lines, and a lateral, abbreviated one; lateral edge slightly reflexed and dentate, with numerous minute, irregular teeth: *scutel* large, impressed each side of the middle, and near the tip: *hemelytra* minutely dentate on the exterior basal edge: *feet* dusky, pale near the incisures.

Length rather more than a quarter of an inch.

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Reduvius, *Fabr.*

1. R. *raptatorius.* Obscure brownish; head, thorax, and anterior feet, spinous, the latter raptatory.

Inhabits the United States.

Body oblong, obscure brownish: *head* contracted above the eyes, spinous; six larger spines before the contraction, placed two and two, and two or four larger ones behind the contraction: *stemmata* sanguineous: *eyes* inserted in the lateral middle of the head: *antennæ* inserted near the tip of the clypeus, with dilated annuli of dull rufous and pale: *rostellum* slightly arcuated, pale: *thorax* contracted in the middle, obsoletely canaliculate, with short, numerous, obtuse spines before the contraction, and dense granuli behind it; posterior angles hardly prominent: *feet* somewhat pale, subannulate, granulated; anterior pair raptatory: *thighs* unequal, anterior pair robust, villous, dusky, armed with an erect, prominent, obtuse spine near the tip above, and a double series of ten equal, equidistant, acute spines beneath; anterior tibiæ with a double series of six similar spines on the inner side: *tergum* rufous on the disk, margin varied with black and pale: *hemelytra*, membranaceous tip with a longitudinal reddish-brown line.

Length more than nine-twentieths of an inch.

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Observed to be not uncommon in Missouri, as well as in Pennsylvania.

2. R. *spissipes*. Thorax and hemelytra light reddish-brown, edged behind with white; venter black, incisures whitish; feet thick.

Inhabits Arkansa.

Head black, posterior lobe with two tubercles: *thorax* light reddish-brown; anterior lobe with dilated, black, oblique, or arcuated lines, of which some are confluent; posterior lobe hardly more elevated than the preceding, with a black posterior submargin and a white posterior margin: *scutel* black, margined with white, and tipped by a few hairs: *hemelytra*, coriaceous portion light reddish-brown, with a narrow whitish posterior margin, membranaceous portion black or dark fuscous: *feet* thickened, black, hairy: *coxæ* bright red: *abdomen* black, margin and band on each segment, white.

Length thirteen-twentieths of an inch.

The feet resemble those of R. *crassipes*, Fabr. but it is a very distinct species.

Corixa, *Geoff.*

1. C. *interrupta*. With black and yellowish transverse lineations; feet pale; face pale green.

Inhabits Missouri.

Head pale green: *eyes* large, triangular, reddish brown: *thorax* transversely lineated with about twenty-two blackish and pale yellowish, equal,

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alternate lines: *hemelytra* rounded at tip, with alternate, numerous, abbreviated, transverse, blackish, and interrupted, pale yellowish lines; lines near the tip much undulated and irregular; margin with about four obsolete blackish spots, which appear to be still more faintly prolonged into fasciæ: *epipleura* pale, destitute of the transverse lines, but the obsolete spots are visible upon it; edge blackish: *wings* white: *feet* pale: *tergum* black, margin pale: *pectus* and *postpectus* testaceous; a large black spot between the anterior pairs of feet.

Length of the body half an inch.

This species equals C. *Geoffroyi*, Leach, in length, but is less robust.

2. C. *alternata*. With black and pale transverse lineations; face and feet pale whitish; beneath black.

Inhabits Missouri.

Head pale greenish-white: *eyes* triangular, large, reddish-brown, dark: *thorax* black, with about eight transverse, pale, equal lines: *elytra* with very numerous, alternate, interrupted, black and pale yellowish lines, which become more irregular and undulated towards the tip: *wings* white: *epipleura* pale, immaculate, edge blackish: *feet* whitish: *pectus* and *postpectus* black: *tergum* black, with a white margin: *venter* black, with a pale margin and terminal incisures.

Length a quarter of an inch.

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Very much resembles the preceding, but is much smaller, darker, and the prevailing colour beneath is black.

Cicada, *Oliv. Latr.*

1. C. *pruinosa.* Body above varied with greenish and black, beneath pruinose: abdomen with a white spot each side, at base, one at the middle margin and another near the marginal tip.

Inhabits the United States.

Wings, nervures of the hemelytra green to the middle, inner edge of the costal nervure brownish, nervures beyond the middle brownish: *anterior thighs* varied with dusky; *anterior pairs of legs* dusky at the exterior tip: *tarsi* varied with dusky: *tergum* black: *segments* destitute of differently coloured posterior margins, basal segment with a white pruinose spot each side of the back, another transversely elongated and attenuated one on the lateral base of the third segment, and another upon the lateral base of the caudal segment: *venter* dusky in the middle: *caudal segments* beneath testaceous, dusky near the middle tip.

Length two inches, to the tip of the hemelytra.

Found on the Missouri; it is also very common in Pennsylvania, and much resembles C. *tibicen*, of Fabr. but it differs in being pruinose beneath, and in having white abdominal spots.

2. C. *marginata.* Body above varied with

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greenish and black, beneath pruinose; tergum black, the segments with yellowish posterior margins.

Inhabits Missouri.

Head and *thorax* greenish-yellow, slightly varied with black: *scutel* black, with the W and elevated *x* greenish-yellow: *hemelytra* with the nervures as far as the middle, green, beyond the middle, brown: *tergum* black, the segments yellowish-brown on their posterior margins; all beneath testaceous, covered with a mealy white.

Length more than two inches and a quarter to the tip of the hemelytra.

Differs from the preceding by being larger, by having the abdominal segments margined, and by being destitute of the white spots on the tergum. The basal spine of the anterior thighs is much more oblique than in the preceding species. This cannot be the *costalis*, if the descriptions of that species are correct.

3. C. *dorsata*. Scutel varied with blackish, greenish-yellow and white; tergum black, a dorsal and lateral line of white spots.

Inhabits Missouri.

Head and *thorax* varied with greenish-yellow and black: *scutel* blackish-chesnut, the W and *x* marks greenish-yellow, lateral lines of the W white near the thorax, a white line from the humerus is interrupted by the anterior lines of the *x*, and also in the middle between these two lines, a white

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spot between the two lateral lines of the *x*: *tergum* black, a dorsal line of white spots and a marginal line of white spots which are continued over the terminal segment, the lateral spot of the first and second segments is very much dilated and confluent, that of the third segment is much elongated and attenuated towards the back, a white oblique spot on the first segment each side of the dorsal line; all these white marks are pruinose.

Length two inches to the tip of the hemelytra.

Found in the prairie near the Konza village, in which vicinity it is rather common. Its note is harsher than that of our *pruinosa*, and is generally uttered when the animal raises in flight, alarmed at the approach of the traveller.

4. C. *aurifera*. Body covered with short golden pubescence; beneath hairy.

Inhabits Missouri.

The nervures of the hemelytra are yellowish to the penultimate anastomosis, beyond which they are brown; the two particular anastomosis are strongly marked with blackish: *head* testaceous: *thorax* but little varied with black: *scutel* black with the usual testaceous lines: *tergum* black, densely covered with the golden hair: *beneath* pruinose.

Length one inch and a half nearly, to the tip of the hemelytra.

This species differs from the preceding in being

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smaller, and in having the golden pubescence, which is more dense on the head and thorax.

Found near the Konza village.

5. C. *parvula.* Anterior thighs with three parallel, subequidistant spines.

Inhabits Missouri.

Body dull testaceous: *head* with a dilated dusky line each side on the front: *stemmata* reddish-yellow: *antennæ* rather large, longer than the head: *labrum* with dusky rugæ and a longitudinal impressed line, abbreviated at the termination of the rugæ: *thorax* indistinctly varied with black, the lateral edge not prominent: *scutel* quadrilineate, lines dilated, abbreviated, intermediate ones very short, terminal *x* hardly elevated: *hemelytra* with a reddish-yellow reflection: *nervures* blackish beyond the middle; costal nervure very conspicuously so; no marginated anastomosis; segments of the tergum dusky at base: *thighs* and *trochanters* varied with black: *anterior thighs* tridentate; teeth prominent, subequidistant, parallel, posterior one longest, anterior one shortest.

Length to the tip of the hemelytra seven-tenths of an inch.

A very small species. I have a specimen from near the Rocky Mountains, which is entirely green, it is a female, and probably of the same species with the above. Its length to the tip of the hemelytra, is four-fifths of an inch.

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6. C. *synodica.* Black, varied with pale testaceous; tergum annulate.

Inhabits the base of the Rocky Mountains.

Body above, black, varied with pale testaceous: *head* with a transverse line before the eyes, and about three triangular spots at base, testaceous: *clypeus* above destitute of grooves: *thorax* sinuous behind, the posterior transverse impressed line placed very near the posterior edge; posterior angles prominent, rounded, lateral edge obtusely emarginate before the posterior angles; margin, two oblique lateral lines and a longitudinal dorsal one testaceous: *scutel* with a lateral marginal line, the elevated *x* and two dorsal dilated lines, testaceous; the dorsal lines are merely emarginate on the inner side, and do not form the W; at the tip of each anterior line of the *x* is a conspicuous, black, impressed puncture, and behind the *x* the posterior edge of the scutel is visible and testaceous: *beneath*, very pale testaceous; rostrum black each side of the grooved base, in the middle and at tip: *feet* lineated with black; anterior thighs bispinous: *tergum* with narrow posterior reddish-brown margins; terminal and anal segments testaceous, the latter with two black spots: *nervures* of the wings testaceous, beyond the middle fuscous.

Length to the tip of the hemelytra less than one inch.

Dr. James and Mr. Peale observed this species in great numbers in one locality, at the base of

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the Rocky Mountains: but it did not occur elsewhere.

Fulgora.

F. *sulcipes.* Thorax with a few black punctures; nervures of the hemelytra margined with black; thighs with black grooves.

Body pale: *head* yellowish-green: *rostrum* elongated, as long as the head and thorax, with an elevated line and edges, two black points between the eyes, beneath between the eyes three lines and edges elevated: *thorax* with a large black spot behind each eye, and several distant black points, two conspicuous black points between the larger ones: *hemelytra* with pale nervures, which are margined with black: *feet* with black grooves; anterior and intermediate tibiæ with an annulus and tip and tarsi black; posterior tibiæ seven-spined, besides the terminal spinous simifascia.

Length to the tip of the hemelytra more than three-tenths of an inch.

A small species which I do not suppose to possess the power of yielding light. It inhabits the Arkansa near the Rocky Mountains.

Flata, *Fabr.*

1. F. *bivittata.* Greenish-yellow; a lateral reddish-brown line confluent on the hemelytra; hemelytra vertical.

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Inhabits the United States.

Body pale green: *head* dusky brownish before: *eyes* red: *antennæ* and *stemmata* yellowish-white; seta black: *thorax* and *scutel* glabrous, with a broad, lateral, dark reddish-brown vitta: *hemelytra* vertical, much dilated, pale greenish-yellow, paler towards the costal margin, inner margin dark reddish-brown: *wings* white: *pectus* and *caudal segment* whitish: *feet*, anterior pairs brownish: *venter* pale green.

Length three-tenths of an inch.

Found near Engineer Cantonment on the Missouri river; it also occurs in Pennsylvania; it is rather smaller than F. *relicta*, Fabr. and the hemelytra are more dilated.

2. F. *stigmata*. Black; wings white, with a black stigma and transverse spot at base.

Inhabits Missouri.

Body black: *vertex* triangular, distinguished by an elevated edge, and an abbreviated, carinate line: *thorax* acutely emarginate behind, and with an elevated edge and dorsal carina, carina abbreviated before, a squamula covering the origin of the hemelytra: *scutel* tricarinate, intermediate carina abbreviated behind: *hemelytra* white, a common black band near the base, becoming brown towards the suture, a black stigma which is margined before with white: *nervures* with white and blackish alternate dots, the latter setigerous: *tibiæ* pale brownish.

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Length a quarter of an inch, nearly.

Very numerous at Engineer Cantonment on the Missouri.

DELPHAX, *Fabr.*

D. *tricarinata.* Whitish; thorax yellowish; hemelytra with two oblique bands and spot; nervures spotted.

Inhabits Missouri.

Body whitish: *head* above, pale green: *eyes* deep brown, profoundly emarginate beneath: *antennæ* brown, longer than the head, second joint rather longer than the first; *seta* longer than the antennæ: *front* brown, deeply impressed with the grooves of the rostrum, presenting three prominent carinæ: *rostrum* with a fuscous band on the middle, and spot near the tip: *thorax* yellowish: *hemelytra* white, an obsolete band at base; an oblique distinct one on the middle united to a curved one beyond the middle, which attains the tip and incloses a linear oblique spot near the tip of the costal margin: *feet* spotted with fuscous: *abdomen* pale yellowish: *tergum* blackish in the middle.

Length of the body and wings three-twentieths of an inch.

Came on board of our boat as we ascended the Missouri, in considerable numbers, on the third of July. The hemelytral fascia, may, on many specimens, be traced into the form of the letter W,

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the oblique spot being included between the posterior curve of the letter and the costal margin.

Cercopis, *Fabr.*

1. C. *quadrangularis.* Brownish-cinereous; elytra with two oblique brown bands confluent at the outer margin; beneath black; feet annulate with pale.

Inhabits Missouri.

Body brownish-cinereous, covered with dense minute hairs: *head* obsoletely spotted: *eyes* fuscous, a pale longitudinal line on the middle, in which is a brown central line: *stemmata* indistinct, black: *thorax* emarginate at the anterior angles for the reception of the eyes, and deeply emarginate behind for the reception of the scutel; a double series of obsolete, indented spots before: *scutel*, tip and basal angles acute: *hemelytra* pale brownish-cinereous; an oblique black-brown fascia from the inner basal angle, is confluent at the middle of the exterior margin, with an oblique fascia which terminates near the sutural tip; tip with a small blackish curve; region of the humerus dusky: *beneath* black; *feet* black: *thighs* annulate with pale; posterior pair of *tibiæ* pale, armed with two robust spines behind, and numerous small ones at tip; posterior tarsi armed with spinules at the tips of the first and second joints beneath: *abdomen* black; tail pale beneath.

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Length more than three-tenths of an inch.

2. C. *obtusa.* Head and anterior part of the thorax pale, with three transverse lines; wings varied with brown and pale.

Inhabits the United States.

Body short, oval: *head* pale yellowish, an elevated, reddish-brown, transverse line between the eyes, and before the stemmata: *front* with about nine parallel, equidistant, reddish-brown lines, which are interrupted in the middle, and abbreviated at the cavity of the antennæ: *antennæ* placed in a deep cavity, beyond which the seta only projects; head beneath black: *thorax* pale yellowish before, reddish-brown and rugose with continuous lines behind, anterior edge elevated, reddish-brown; a reddish-brown transverse band on the middle: *scutel* pale reddish-brown: *hemelytra* varied with fuscous and pale, generally forming a band on the middle, which is more distinct on the costal margin, spot at tip and larger one at base; nervures dark brown: *feet* black, joints whitish: *tibiæ* and *tarsi* whitish: *posterior tibiæ* bispinous behind, of which one is very robust.

Length rather more than one-fifth of an inch.

Female, colours generally paler, with the pectus and abdomen whitish.

Very common near Council Bluff, and is also found in Pennsylvania. The band of the hemelytra is sometimes indistinct or wanting, and there are three brown dots near the tip.

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Tettigonia, *Oliv. Lam. Latr.*

1. T. 8-*lineata*. Pale greenish-white, lineate with rosaceous; nervures of the hemelytra rosaceous.

Inhabits Missouri.

Body pale greenish-white: *head* quadrilineate with rosaceous, the two intermediate lines double before the stemmata, and with an obsolete spot behind them: *stemmata* rosaceous: *eyes* a darker red: *thorax* minutely rugulose transversely; six or eight rosaceous lines, the two lateral ones dilated, submarginal: *scutel* transversely rugulose, four rosaceous lines: *hemelytra* with the nervures and costal margin rosaceous: *wings*, nervures rosaceous: *tibiæ* rosaceous, spines of the posterior pair white.

Length rather more than seven-twentieths of an inch. A male.

Var. a. rather larger; colour pale-greenish; those parts which are rosaceous in others, are yellowish in this variety.

Near Engineer Cantonment on the Missouri.

2. T. *limbata*. Body deep black; side edged with white.

Inhabits Missouri.

Body deep black, punctured; a white lateral line from the eye to the tail: *head* before and beneath with minute white points: *eyes* whitish beneath: *thorax* with a transverse series of four

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larger impressed punctures, the exterior ones with a rufous spot and resembling stemmata; a white lateral line interrupted by a yellow spot over the interval between the two anterior pairs of feet: *scutel* impunctured, two rather large impressed dots, and a transverse impressed line on the middle; posterior portion transversely rugulose: *hemelytra* with large distinct, impressed punctures: *wings* whitish; nervures and base black: *feet*, spines of the posterior tibiæ not very prominent or rigid.

Length more than a quarter of an inch.

Near Engineer Cantonment on the Missouri.

3. T. *mixta*. Dull blackish-brown; elytra with obsolete minute pale punctures; tergum deep black; feet annulate with pale spots.

Inhabits Missouri.

Head rugose, the lines somewhat longitudinal: *stemmata* rufous, placed on the anterior margin; first joint of the antennæ pale at tip: *labrum* irrorate with pale, and two larger spots at base: *thorax* transversely rugose and with an anterior series of punctures, lateral edge behind the eye white: *hemelytra* densely rugose, with a few pale, minute spots on the nervures, and rather larger ones on the inner and terminal margin; two abbreviated whitish lines on the humeral origin of the nervures; (when viewed towards the light, the whole wing is irrorate with pale hyaline points:) *wings* blackish, emarginate at tip; nervures fuscous:

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tergum deep black, edge of the segments piceous: *pectus* deep black, segments generally edged with whitish: *feet*, anterior pairs annulate near the tip of the thighs with whitish spots; *tibiæ* with two or three whitish spots; posterior pair of feet paler beneath: *venter* irrorate with pale points, lateral segments with a longitudinal pale line on each, and pale inferior edge; caudal segment with large, dense, pale spots.

Length less than three-tenths of an inch.

4. T. *obliqua*. Body yellowish-white, with two sanguineous lines, connivent upon the head and scutel; hemelytra white, with two sanguineous lines.

Inhabits the United States.

Body pale yellowish-white: *head* with two dilated sanguineous lines, connivent before: *antennæ*, seta as long as the head and thorax, dusky: *thorax* with two sanguineous lines: *scutel* with two lines and tip sanguineous: *hemelytra* whitish, an oblique line from the base slightly refracted on the thinner margin, and terminating behind the middle of the margin; an oblique longitudinal line on the disk, a more abbreviated, obsolete, subcostal line, and a costal line from the base to the middle of the edge, sanguineous: *feet* whitish: *tail* rosaceous.

Length rather more than one-tenth of an inch.

Found at Engineer Cantonment, and is also common in Pennsylvania.

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5. T. *comes*. Pale yellowish, with sanguineous spots.

Inhabits Missouri.

Body pale yellowish: *head*, a transverse sanguineous line, profoundly arcuated in the middle, and a smaller transverse spot before: *eyes* fuscous: *thorax* with three sanguineous spots, the lateral ones smaller, and the intermediate one arcuated: *scutel*, a sanguineous spot at tip: *hemelytra* yellowish-white, spotted with sanguineous; spots arranged two at base, of which the outer one is small, and the inner one elongated and abruptly dilated on the inner side at tip; two upon the middle, of which the outer one is elongated into a very oblique line; two behind the middle, of which the inner one is obliquely elongated, and the outer one smaller, and interrupted; and a transverse linear one near the tip, ramose upon the nervures: *feet* whitish.

Length to the tip of the hemelytra, one-ninth of an inch.

The line and spot on the head and the spots of the thorax are sometimes obsolete, but always visible, and the latter are sometimes connected by curving towards the anterior edge of the thorax. The spots of the hemelytra are also sometimes slightly interrupted, or connected into four oblique bands.

6. T. *trifasciata*. Pale yellowish-white; elytra

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irrorate with reddish and somewhat trifasciate with dusky.

Inhabits Missouri.

Body pale yellowish-white: *head* with two or three obsolete dull sanguineous spots on the vertex in the form of curves or circles: *eyes* dusky: *thorax*, a sanguineous line abbreviated before, and an obsolete curve at the anterior angle: *hemelytra* whitish, irrorate with sanguineous; a dilated, brownish, interrupted, subbasal band; an obsolete interrupted band behind the middle, upon the posterior costal termination of which, is an abbreviated sanguineous line, and an oblique blackish band near the tip; a large quadrate white immaculate spot on the middle of the costal margin; humeral base white, immaculate: *tergum* dusky at base: *feet* white.

Length to the tip of the hemelytra one-eighth of an inch.

The spots of the head and thorax are sometimes hardly discernible, and the intermediate band is often so faint and interrupted as to be overlooked.

7. T. *basilaris*. Pale yellowish, varied with sanguineous; elytra reddish-brown at base.

Inhabits Missouri.

Body pale yellowish: *head* obsoletely varied with sanguineous: *eyes* dusky or black: *thorax* dusky behind; anterior margin with four or five obsolete sanguineous spots: *scutel* dusky reddish-

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brown or sanguineous at tip: *hemelytra* with a broad band of reddish-brown at base; a spot on the middle of the thinner margin, then an oblique line, and another oblique line towards the tip, sanguineous; at the inner extremity of the latter is a very minute black point.

Length to the tip of the hemelytra, one-ninth of an inch.

A new genus of Mammalia proposed, and a description of the species upon which it is founded. By T. Say, *and* G. Ord. *Read March* 8, 1825.

Order GLIRES.

Genus Neotoma.

Natural Character.

Teeth 16. { 8 superior. { 2 incisores. 6 molares. } 8 inferior. { 2 incisores. 6 molares. }

Molares with profound radicles.

Superior jaw. Incisor even, and slightly rounded on its anterior face: *first molar* with five triangles, one of which is anterior, two exterior, and two interior: *second molar* with four triangles, one anterior, two on the exterior side, and a very

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small one on the interior side: *third molar* with four triangles, one anterior, two exterior, and a very minute one interior.

Inferior jaw. Incisor even, pointed at tip: *first molar* with four divisions or triangles, one anterior a little irregular, then one exterior, one interior opposite, and one posterior: *second molar* with four triangles, anterior and posterior ones nearly similar in form, an intermediate one opposite to the interior and exterior one: *third molar* with two triangles, and an additional very small angle on the inner side of the anterior one.

Tail hairy: *fore feet* four-toed, with an armed rudiment of a fifth toe: *hind feet* five-toed.

Observations. The grinding surface of the molares differs somewhat from that of the molares of the genus Arvicola, as will be perceived by our figures; but the large roots of the grinders constitute a character essentially different. The folds of enamel which mark the sides of the crown, do not descend so low as to the edge of the alveolar processes; in consequence of this conformation, the worn down tooth of an old individual must exhibit insulated circles of enamel on the grinding surface.

This genus must be placed near to Arvicola, of which, it is probable, some naturalists may be inclined to consider it a subgenus.

N. *floridana*. Pl. xxi. Snout elongated; eyes and ears very large; tail longer than the body.

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Ears conspicuous, thin, subovate, clothed with such fine hair as to appear naked: *whiskers* long, anterior ones white, the rest black: *tail* white beneath, dusky above; its scales so small, and so well concealed with hair, as to be hardly visible: *feet* and *claws* white, the latter short: *body* and upper part of the *head*, clothed in fine fur, of a lead colour, intermixed with yellowish and black hairs, the black predominating on the ridge of the back, and the top of the head, the yellow on the sides; the lead-coloured fur not visible externally: the border of the *abdomen* and of the *throat*, buff colour: whole *lower parts* a delicate white, tinged with cream colour: base of the *claws* covered with white hairs.

Length from the tip of the snout to the anus, seven inches and a half: tail six inches and a quarter long. Male.

The body has none of those long rigid hairs which are so notable in the Mus *decumanus*. The whole pelage feels velvety, particularly the belly, which is as soft as is that of our common flying squirrel. The *testes* are hardly visible externally, differing, in this respect, from those of the house rat, which are so conspicuous an apparatus in this unwelcome guest.

This beautiful animal was discovered in a log granary, situated in a ruined and deserted plantation, in East Florida. When first aroused, it ran a short distance, then returned, and stood close

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by us, allowing us to touch it with a gun before it again retreated. Its countenance was mild, or without that suspicious and cunning air, which is so remarkable in the common brown rat. We have reason to think that the species is not uncommon in Florida, as several individuals were seen by Mr. Say, in an old mansion; but he was unprovided with the means of capturing them.

Brought from East Florida, in the year 1818, in the collection of Messrs. Maclure, Say, Ord and Peale, and deposited in the Philadelphia Museum.

The individual above described was the only one that we were enabled to procure, during our journey into Florida. It was a young one, and not fully grown, as we may reasonably conjecture from the greater size of the old individual of the same species, which was procured by Mr. Say on the Missouri, and described in Long's Expedition to the Rocky Mountains.

In the year 1818, Mr. Ord sent to the Philomatique Society of Paris, a short description, accompanied with a figure, of this animal, which was named Mus *floridanus;* and the description was published in the Bulletin of the Society for December, of the same year. In the hurry, incident to travelling, he had neglected to examine its teeth, when recently killed; and afterwards assuming as a fact, what ought not to have been assumed, that it was a true Mus, he did not hesi-

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tate to class it under that denomination. The naturalists of Paris questioned the propriety of his nomenclature; and, with Mr. De Blainville, who prepared the account for the Bulletin, appeared to coincide in the opinion that the animal was a MYOXUS, and not a MUS.

That it is neither a MYOXUS nor a MUS, will now be evident from the figures of its teeth, in Plate xxii. When we first commenced an examination of its teeth, we were astonished to find in the grinding surfaces of the molares, a close approximation to those of ARVICOLA; but the discovery of radicles, precluded us from referring it to that genus.

Although we are aware that the multiplication of genera has become an evil, yet we have ventured to found a genus on our animal, from our inability to class it under any of the genera of the systems.

PL. XXI.—NEOTOMA *floridana*.

PL. XXII.—Fig. 1. Profile view of the jaws, magnified.

2. Lower jaw, left side, with the alveolar process removed, in order to exhibit the roots of the teeth; natural size.

3. Molares of the upper jaw, left side, magnified.

4. Molares of the lower jaw, left side, magnified.

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Description of a new Species of South American FRINGILLA. *By* CHARLES BONAPARTE. *Read March* 1, 1825.

FRINGILLA.

F. *xanthoroa.* Dusky; rump yellow; primaries edged with greenish; tail tipped with white.

Length four inches and a half.

Bill and *feet* light flesh colour: *upper mandible* darker, blackish at tip: *irides* dark brown: general *plumage* above blackish, each feather margined with dull pale rufous: *head* and *back* slightly pruinous; inferior portion of the *rump* bright lemon-yellow, passing to white on the superior tail coverts; all *beneath* whitish, with an indication of a blackish collar on the throat, and a few obsolete blackish spots on the flanks, which are strongly tinged with brownish-rufous: *wing-coverts* and *tertials* blackish, broadly margined on the exterior web and at tip with dull pale rufous: *inferior wing-coverts* dull cinereous, slightly tinged with olivaceous: *primaries* and *secondaries* blackish, finely edged with olive-yellow on their outer web, the latter tipped with whitish: *tail* hardly emarginated, black, each feather edged with greenish, and tipped with whitish.

This species belongs to the subgenus *Carduelis*, the bill being, however, thicker and less acuminate

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than usual in this subgenus, approaching somewhat that of F. *serinus* of Europe.

The specimen here described and figured is a male, which lived for some time at the house of Mr. Droz, of this city, who received it from Rio Janeiro: the bird was very tame, sang sweetly, somewhat in the manner of the Canary, of which it had nearly the habits: its vocal season lasted for nine months, and like other birds of the antarctic zone, it sang with more vivacity during winter, when our birds become mute. Its recent death was occasioned by a very remarkable cataleptic disease, with which it had been afflicted for nearly six months, during which time its colour became duller, and it lost the pruinous appearance.

A living specimen still in the possession of Mr. Droz, corresponds in marking with the preceding; its colours are only lighter and without any pruinous appearance; beneath it is very slightly tinged with rufous. The duller plumage of this latter might induce us to suppose that it is a female, was it not that it sings delightfully: we believe it is a male, which has lost some of the brilliancy of its colouring, by a protracted captivity.

This species moults twice a year, and has the pruinous appearance only during its breeding time.

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Description of a new Species of Mammalia, whereon a genus is proposed to be founded. By T. Say *and* G. Ord. *Read March* 22, 1825.

Order GLIRES.

Genus Sigmodon.

Essential Character.

Molares in each jaw six, subequal, with radicles, and with very profound, alternate folds towards the summit.

Natural Character.

Teeth 16. { 8 superior. { 2 incisores. 6 molares. } 8 inferior. { 2 incisores. 6 molares. }

Superior jaw. Incisor slightly rounded on its anterior face, truncated at tip: *first molar* equal in width to the second, composed of four very profound, alternate folds, two on each side, extending at least to the middle of the tooth: *second molar* quadrate, somewhat wider, and a little shorter than the preceding, with three profound folds, extending at least to the middle, two of which are on the exterior side: *posterior molar* a little narrower, but not shorter than the preceding, with three profound folds, two of which are on

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the exterior side, extending at least to the middle, the inner fold opposite to the anterior exterior fold, and not extending to the middle.

Inferior jaw. *Incisor* obliquely truncate at tip, the acute angle being on the inner side, it originates in the ascending branch of the maxillary bone, passing beneath the molares: *molares* subequal in breadth, inclining slightly forwards: *first molar* a little narrower than the second, with five profound, alternate folds, three of which are on the inner side: *second molar* subquadrate, with two alternate, profound folds, the inner one anterior: *third molar* about equal in length and breadth to the anterior one, but rather larger, and somewhat narrower than the second, with which it corresponds in the disposition of its folds, excepting that they are less compressed.

Tail hairy: *feet* simple: *fore feet* four-toed, with the rudiment of a fifth toe, having a nail: *hind feet* five-toed.

Observations. The enamel of the molares is thick, but on the anterior face of each fold, excepting the first, it is obsolete. From the arrangement of the folds, as above described, it is obvious that the configuration of the triturating surface, (occasioned by the folds of enamel dipping deeply into the body of the tooth, in the second and third molar of the lower jaw,) accurately represents the letter S, which is reversed on the right side; thus bearing considerable resemblance to the posterior

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tooth of the genus SPALAX, to which, also, it has a slight affinity in the truncature of the inferior incisores.

The configuration of the intermediate molar of the upper jaw may be compared to the form of the Greek letter Σ, whence our generic name.

In respect to its generic affinities, it is very obvious that its system of dentition indicates a proximity to ARVICOLA, but the different arrangement of the folds, and the circumstance of the molars being divided into radicles, certainly exclude it from that genus. With respect to radicles, it resembles the genus FIBER; but it is allied to this genus in no other respect.

We may further remark that the teeth of our specimen are considerably worn, a condition that materially effects the depth of the folds.

S. *hispidum.* Head thick; snout elongated; eyes pretty large; ears large, round; tail nearly as long as the body.

Ears slightly clothed with hair: *fore legs* short: *hind feet* large and strong, their lateral toes very short, and their *claws* stout: *upper parts* and *head* a pale dirty yellow ochre, mixed with black: *lower parts* cinereous; hair of the upper parts and sides long, plentiful and coarse.

Length from the tip of the snout to the insertion of the tail, six inches; tail four inches long. Female.

In immature specimens, black is the predominating colour; in adults yellow predominates.

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This animal we found to be very numerous in the deserted plantations, lying on the river St. John, in East Florida, particularly in the gardens. Its burrows are seen in every direction. Emigrants to that section of our country, will, doubtless, find this species to be a great pest in rural economy.

We brought three specimens of it from East Florida, in the year 1818, and deposited them in the Philadelphia Museum.

This animal appears, in classification, to occupy a station between the genera ARVICOLA and MUS, having the habits, and some of the external characters of the former, with teeth remotely allied to the latter. After a careful perusal of those authors within our reach, who have laid down the characters of mammiferous quadrupeds, particularly Mr. F. Cuvier's recent work, entitled "*Des Dents des Mammifères, considérées comme caractères Zoologiques*," we have found ourselves under the necessity of constructing a genus for it, it being impossible to refer it to any one of the genera, the teeth of which have been figured in the above mentioned useful work.

PL. XXII.—Fig. 5. Profile view of the jaws, magnified.
6. Lower jaw, natural size, left side, with the alveolar process removed, to exhibit the roots of the teeth.
7. Molares of the upper jaw, left side, magnified.
8. Molares of the lower jaw, left side, magnified.

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Remarks on the floating apparatus, and other peculiarities, of the genus JANTHINA. *By* REYNELL COATES, M. D. *Read March* 1, 1825.

The elegant apparatus of air cells attached to the posterior part of the foot of the JANTHINÆ, and supporting them upon the surface of the ocean, has given rise to some difference of opinion among naturalists. Mr. Bosc has asserted that the animal is capable of absorbing the air of the vesicles and of refilling them at will, in order to sink or rise in the water.

M. Cuvier considers this to have been a mistake, as he could not discover any connexion between the animal and the air cells of the float, and as there was no cavity within the animal which could contain the air when absorbed. In fact, this author regards the float as a simple appendix of the integuments, over which the animal has no farther control, than the ability to compress it to a certain extent, by retracting it within the shell, or to abandon it to its natural elasticity. From its position on the posterior part of the foot, near the usual situation of the operculum, he is inclined to consider it as a vestige of that organ; but, as specimens occurred, in which, though the organ was totally wanting, no cicatrix could be discerned on the foot, Cuvier concludes that it

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is sometimes naturally absent, or, that it is developed at a certain age or season.

During a recent voyage to the East Indies, I had many opportunities of observing the manners of the JANTHINÆ, and in the JANTHINA *fragilis*, I have frequently seen the mode in which the organ in question is constructed by the animal.

Individuals being placed in a tumbler of brine, and a portion of the float being removed by the scissors, the animal very soon commenced supplying the deficiency in the following manner: the foot was advanced upon the remaining vesicles, until about two-thirds of the member rose above the surface of the water; it was then expanded to the uttermost, and thrown back upon the water, like the foot of a Lymneus when commencing to swim; in the next place it was contracted at the edges, and formed into the shape of a hood, enclosing a globule of air, which was slowly applied to the extremity of the float. A vibratory movement could now be perceived throughout the foot, and when it was again thrown back to renew the process, the globule was found enclosed in its newly constructed envelope.

It does not appear that the Janthinæ ever sink below the surface, while they remain attached to the vesicles, but when they are entirely separated they immediately fall to the bottom of the tumbler, and are unable afterwards to rise from their position; and though they continue to be vigorous

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for some time, they generally die in a few days. As their respiratory organs are calculated for the water, this circumstance is probably accidental.

Along the under surface of the float, passes a little line of pearly fibres, and upon this line are attached the eggs of the animal. In the J. *fragilis* the float is convex, subcarinate above, and concave beneath, straight, and composed of large vesicles: in the *globosa*, it is composed of smaller vesicles, it is flat above and beneath, and by the re-union of one of the edges, it is formed into a spiral and nearly circular disk: in the *exigua*,* it is straight like that of the *fragilis*, but the vesicles are smaller, and the float is narrow and flattened.

From what has been said, it appears that the floating apparatus of the JANTHINA is constructed by the animal for the purpose of supporting its shell and its young upon the surface of the water;

* The shell which I have here termed *exigua*, agrees very well with the description given of that species in the *Dict. des Sciences Naturelles*, but that which is contained in Lamark's *Animaux sans vertebres*, is much less clear. The plate referred to in the former work, is wanting in all the copies of the *Enc. Meth.* to which I have access; and a deep revolving groove on the middle of the body whorl, (one of the strongest characteristics of the shell in my possession,) is unnoticed in either. Here is some want of perspicuity, but I must leave for the present the resolution of the difficulty.

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that the membrane which encloses the cells is secreted by the foot, and that it has no attachment to the animal, other than the close cohesion resulting from the nice adaptation of proximate surfaces; and lastly, that in all probability, the young shells when liberated from their chambers, ascend the float of the mother, and in this way gain access to the surface, and construct the elements of their future support.

The eggs of the JANTHINÆ are, I believe, but slightly noticed by naturalists, and the plate by Sir Everard Home, in the *Phil. Trans.* 1817, appears to be founded on an error.

It is true that I have never seen the eggs of the *fragilis*, but the appearance of the figure referred to, is so utterly unlike that presented by the *globosa* and the *exigua*, that I am induced to believe that he has mistaken the eggs of some other marine animal for those of the JANTHINA.

The eggs of the two last named species are contained in little membranous bags of some consistence, which are attached in rows to the pearly fibres beneath the float by little filamentous peduncles, of an appearance similar to that of the fibres. These bags are covered with little gelatinous, conical eminences, and are partially divided by incomplete septa, as may be discovered by means of a powerful lens. In the *exigua* the division is very partial, but in the *globosa*, it gives the whole sack a chambered aspect. It would

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seem that the animal occupied considerable time in the deposition of its eggs, for the bags nearest the extremity of the float are constantly found empty, while central ones contain young shells fully formed, and those nearest the animal are filled with the eggs.

The little appendages which Foskahl supposed to be used in swimming, I cannot discover in the young animals, on account of the high magnifying power required for that purpose; but I have never observed the mature JANTHINA to move like the LYMNEUS, upon the surface of the water. They appear to be passive to the action of the winds and waves, their residence upon the ocean rendering them little subject to accidental collision with hard substances, and their wants being amply supplied without an approach to land. They prey upon Crustacea and other Mollusca, and I have not unfrequently found shells of their own genus in their stomachs. The whole extent of the intestinal canal is capable of a vast dilatation, and I have occasionally found shells of three times the diameter of the œsophagus, lying unaltered near the rectum.

The young shells are of a golden colour, and perfectly smooth.

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Description of two new Species of the Linnæan genus BLENNIUS. *By* C. A. LESUEUR. *Read December* 21, 1824.

BLENNIUS.

1. B. *herminier*. Dorsal fin anteriorly with an elongate black spot; filaments upon the nape, above the eyes and nostrils; lateral line very much curved over the pectoral fins.

Body, including the caudal fin, five inches long, one inch seven lines deep, and about an inch in thickness at the pectoral fins; but little elongated in proportion to its height, slightly compressed: *abdomen* ample; anus placed nearly in the middle of the body: *back* more elevated towards the neck, and thence descending gradually to the tail; anteriorly the head, front, and snout are upon an inclined line, very slightly arcuated: *eyes* slightly prominent, approximate: *front* short, depressed: *snout* more projecting than obtuse, longer than the diameter of the eye: *cheeks* pretty convex: *pieces of the opercula* indistinct: *branchial opening* large, extending from the nape to the ventral fins: *branchiostegous membranes* pretty large, sustained by five rays and united beneath: *mouth* pretty large, its opening straight, and its angle under the anterior part of the eye: *jaws* covered with thick fleshy lips, scarcely allowing the conic teeth to be seen, of which the anterior row are strong;

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those of the interior row smaller; there are also teeth at the base of the tongue, and conic arcuated teeth upon the wings of the palate: *tongue* not very apparent: *lateral line* straight on the tail, and much arcuated over the pectorals: *dorsal fin* long, extending from the nape to the base of the caudal fin, sustained by sixteen spinous rays and twelve flexible ones, all simple; its anterior part is twice as long and half as high as the posterior part, which is rounded: *pectoral fins* placed behind the anterior termination of the dorsal, and marked with seven or eight dark brown spots, the rest of the fin being of a lighter reddish-brown: *ventral fins* three-rayed, placed opposite to the origin of the dorsal: *anal* of twenty, simple, flexible rays, almost as deep as the anterior part of the dorsal fin, and the extremities are more separated; dorsal almost touching the caudal, whilst the anal is pretty far from it: *caudal* as large as the pectoral, oval, sustained by fourteen bifid rays: *scales* rounded upon the body and pretty large: *opercula* not scaly: *colour* reddish-brown, with deeper spots; upon the rays of the dorsal is an elongate blackish spot: *cheeks* and *head* rufous-brown, vermicular with little blackish lines, which form an irregular kind of close net work: *nostrils* surmounted by a little ciliated appendage: *eyebrows*, each surmounted by a fascicle of cilia; nape with two lines of cilia.

D. 16, 12. A. 20. P. 16. J. 3. C. 14.

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Taken at St. Bartholomews, in cavities of madreporic rocks, in the month of June, 1816.

2. B. *hentz.* A short fleshy appendage over each eye, and a small one over each nostril; teeth long, fine, equal, close set in the jaws; dorsal fin long, subequal, a little higher posteriorly.

Body three inches and four lines long, including the caudal fin; one inch deep, and from six to seven lines thick, taken near the pectoral fins. Its form is little elongate, rather short; its thickest part is the nape; the front describes a curved line descending pretty rapidly to the end of the snout: *back* subrectilinear, descending gradually towards the base of the tail: *abdomen* ample, rounded: *sides* compressed: *anus* placed in the middle of the body: *snout*, although very short, not truncated vertically: *eyes* large, placed on the summit of the head, projecting a little, situated above the angle of the mouth: *branchial opening* placed anterior to the base of the pectoral fins, and extending from the base of these fins to the height of the eye; it is somewhat oblique: *mouth* small, nearly straight: *lips* not very thick: *jaws* equal, furnished with long and fine curved teeth, arranged like those of a comb: *dorsal fin* long, extending from the nape to the base of the caudal; its anterior part is lower, more equal, and sustained by eleven simple spinous rays; its colour is black, with some whitish spots; its posterior part is more elevated, rounded at the extremity and

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sustained by fourteen divided rays, of a reddish colour, with five blackish bands; in the middle it is slightly depressed, which admits of distinguishing the two parts: *pectoral fins* large, placed a little behind the origin of the dorsal fin: *anal fin* low, equal, reaching the base of the caudal: *ventral fins* of a blackish colour, with four or five light blackish bands, middle sized, placed before the line of the origin of the dorsal fin: *caudal fin* small, round, ornamented with three or four vertical bands; colour of the body light bluish-ash, mixed with rufous, with numerous and irregular black and rufous spots.

D. 11, 14. A. 16. P. 16. J. 3. C. 18.

Observations. This species was sent to me from Charleston, S. C. by Mr. Hentz, and appeared to me at first sight to be the Blennius *bosquianus*,* described in the work of Mr. Lacépède, Vol. ii. page 493, Pl. 13, fig. 1. but after examining it with attention, I recognised in this individual, appendices above the eyes, and other very small ones upon the nose. These appendices are not mentioned by Mr. Bosc, and could hardly have escaped that celebrated discoverer, after whom the species was named, and who resided himself in Charleston. This difference, although to appearance very slender, may nevertheless characterize this species, and distinguish it from that of Mr. Bosc.

* Taken from the manuscript of Mr. Bosc, naturalist, and French Consul at Charleston.

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Description of a new Species of Trilobite. *By* J. J. Bigsby, M. D. *Read March* 15, 1825.

I beg to present to the Academy, a description of a new species of Trilobite, found at Lockport in the state of New York, in the black, shaly, horizontal limestone forming the lower part of the ravine by which the western Canal ascends the "Parallel Ridge" of Lake Ontario. I am not prepared to assign to this limestone its exact place in the series of geological formations. It is above the saliferous sandstone, and therefore more recent than the rocks best known as abounding in trilobites.

In imitation of the only systematic writer on this branch of the crustacea, I have named this species after the discoverer, Lieut. Bolton, Royal Engineers.

Paradoxus.

P. *boltoni*. Pl. xxiii. Oval, blind; surface with small tubercles, and striæ; clypeus rounded before; exterior angle extending in a broad spine; abdomen fourteen jointed; segments recurved, falcate; tail membranaceous and serrate.

The shape of this individual is oval, approaching to ovate; it is moderately flat; the whole length is five inches and four-fifths; its breadth

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across the middle is four inches and nine-tenths; wherever the cutis is not removed, it is covered profusely and irregularly with small tubercles. The denuded portions in this specimen for the space of three quarters of an inch from the external margin, is, in a very small degree, depressed, and displays a number of broken and continuous striæ, parallel to that margin. There are no traces of organs of vision. The buckler is nearly the segment of a circle; anterior edge in the present case imperfect; it is four inches and three-fifths broad, and one inch and one-ninth long at the centre; it joins the abdomen by a somewhat sinuous transverse line; cheeks and front of equal breadth; the former are flat, but rise at the sharp ridge by which they unite with the front; they are triangular in shape; their outer angles terminating by an acute tip. The striæ mentioned above are here not quite parallel to the external border; the front is a shallow depression, rounded, but tapering anteriorly; it is intersected from above, on each side obliquely towards the mesial line, by a ridge bifurcating downwards; another smaller ridge nearly bisects the front perpendicularly.

The abdomen and post abdomen are not distinct. The abdomen exclusive of the cauda, is three inches and a half long; it exhibits fourteen costæ, varying indiscriminately from one-fifth to one-fourth of an inch in breadth, except the three inferior ones, which are rather broader; they oc-

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cupy the whole abdomen without membranous interspaces, and are separated by a black sulcus, not always well defined, and sometimes a line in diameter; each costa is canaliculated from the upper and inner angle to the tip.

The middle lobe is separated from the lateral by a shallow rude sulcus, which, however, does not always destroy the continuity of the costæ* as they cross it; this lobe is slightly convex, one inch and a half broad at the top, and so continues to the sixth costa, after which it gradually contracts until at the bottom it is one-fifth of an inch broad, subsiding insensibly into a flat membrane-like surface; its longitudinal sulci pass one inch further downwards, and, expanding a little, unite with the costæ on each side, the posterior edge of the space included by them being dentated.

The lateral lobes are quite flat, one inch and a half broad anteriorly, and by gradual prolongation become at the fourth costa one inch and four-fifths in breadth; this dimension is maintained to the ninth articulation, when it slowly decreases to one inch at the bottom; the recurvature of the costæ is gentle in the upper eight, but thence increases rapidly. Their extremities, advancing two-fifths and four-fifths of an inch into the imbedding rock, are falcate, with their raised black edges, and clearly marked points.

* Although incorrectly represented in the drawing as always destroyed.

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The characters which seem to place this trilobite in the genus PARADOXUS of Brongniart, are, its flatness, the outline of the buckler, the want of eyes, the prolongation of its costæ beyond the membrane they are imagined to support; a fact, in that author's opinion, of primary importance; the form and direction of their falcate extremities; the complete investment of the abdomen by the costæ; the relative sizes of the lobes of the abdomen; and finally, the serrated membranous fringe surrounding its lower parts.

The specific distinctions are chiefly found in the shape; in the tubercles and striæ of the cutis; the form of the front;* the gentleness of the recurvature of the costæ, and in the form of the lower end of the middle lobe of the abdomen.

On a new Species of MODIOLA. *By* THOMAS SAY. *Read April* 19, 1825.

Amongst a number of marine shells from the island of Minorca, presented to the Academy by Dr. Alexander Montgomery of the U. S. Navy, is a single valve of the PECTEN *nodosus*, Linn. on which were several elevations that on a cursory glance presented an appearance not unlike the

* Very undefined in this individual.

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BALANUS. On a more particular inspection each elevation proved to be similar to the others in form and consistence, and to be composed of fine dark coloured sand, agglutinated together, attached by a broad base to the surface of the Pecten, and rising in the shape of a very low cone around an included shell, the visible portion of which is exactly cordate. Having carefully detached the mass, I found the imbedded shell to be a MODIOLA, closely allied to the *discors*, Gmel. with its byssus very firmly affixed to the supporting surface.

The following is a description of this shell.

MODIOLA.

M. *opifex*. Oval, reddish-brown; anterior hinge-margin flattened, cordate; within iridescent.

Base contracted behind the middle, the contraction not wide nor very deep; between this part and the beaks the surface is blackish and transversely wrinkled; posterior and anterior surface of the valve longitudinally striated, with the exception of the anterior cordate hinge-margin, which is flattened and covered by a thick stratum of compact sand; anterior tip equally arcuated above and below; within iridescent, brilliant, striated as on the exterior surface, edge crenate.

Breadth nearly half an inch; length more than one-fifth of an inch.

This species differs from the M. *discors*, and

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M. *lateralis*, Nob. not only by its very singular habit, but also by its flat and perfectly heart-shaped anterior margin; the regular and equal curvature of its anterior extremity; the narrower interval between the anterior and posterior striated surfaces, and the more profound and less dilated basal contraction.

PL. xix. fig. 2. M. *opifex* imbedded in its mound.
a. External view of a valve.
b. Internal view of do. (all enlarged.)

Descriptions of ten Species of South American Birds. *By* CHARLES BONAPARTE. *Read April* 19, 1825.

Having been favoured by Mr. Paul Goddard with a collection of South American birds, lately brought to this country, I remarked some very rare species, on which a few observations may be elucidatory of some obscure points of Ornithology; I therefore submit them to the Academy for their Journal.

1. MONASA *fusca*, Nob.

Fusco-brunnea, scapis pennarum flavescentibus; remigibus rectricibusque immaculatis; juguli macula alba; fascia pectorali nigra.

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Length, eight inches. *Bill* one inch and a quarter long, black; *mandibles* subequal, both slightly curved downwards at tip: *feet* dusky: *bristles* of the *capistrum* pale yellowish-rufous, black at tip from the middle, reaching to three quarters the length of the bill: *head* and *neck*, above and on each side, and *interscapular region*, black, each feather with a streak of yellowish-rufous along the shaft: *back*, *wing-coverts*, and *scapulars* brown, with the yellowish streak, but paler and confined to the tips: *rump* and *superior tail-coverts* brown, immaculate, somewhat tipped with dull yellowish; between the bill and eye a large yellowish-rufous spot; from the angle of the lower mandible each side of the throat, a whitish streak: *throat* yellowish-rufous, intermixed with black; feathers of the *neck* beneath, snowy white from the base to the middle, then widely black, with the shaft and the tip yellowish-rufous, an arrangement which constitutes a pure white concealed space, a black collar on the breast, and then gives a yellowish-rufous tint to that part; except the above white feathers, the whole plumage of the bird is lead colour at base; it is very soft and with disunited webs: *belly* and *sides* dusky-yellowish: *vent* and *inferior tail-coverts* whitish-rufous: *inferior wing-coverts* and *inner margins* of the *primaries* beneath pale yellowish-rufous; *quill feathers* plain dark brown, edged with rufous on the outer web, and broadly margined

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with the same colour on the inner at base: *secondaries* and *tertials* with a small heart-shaped whitish-rufous spot in the middle at tip; the wings when closed, do not reach the middle of the tail: *tail* cuneiform, composed of TWELVE wide feathers of a pure dark brown, having but a slight indication of the heart-shaped spot at tip.

This species has, until now, been but imperfectly known, none but the young having fallen under the observations of Ornithologists, who, perceiving that their bird was not perfect, even doubted its constituting an independent species, thinking it the young of another well known. Latham first established the species from a young specimen, and le Vaillant having an opportunity of examining six individuals, also young, gave a good figure and an accurate description of it under the name of *Tamatia brun*, in his *Hist. Nat. des Barbus*, pl. 43. The present specimen, whose description differs but in a few points from the others, is evidently adult, and settles the question of specific distinction.

The genus Bucco of Linné having been justly divided, authors have disagreed in the mode of separating it, and unfortunately so great is the confusion, that some of the BUCCONES of Vieillot, are CAPITONES, agreeably to Temminck and vice versa. The present species, though certainly a CAPITO of Temminck, TAMATIA of other recent Ornithologists, is recorded by Vieillot as a BUCCO; but he

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could not have examined it, otherwise the downward curvature of both mandibles and their subequal length would have induced him to arrange it in his restricted new genus, MONASA, which I am inclined to adopt, as constituted by him, adding the present species. The tail composed of twelve feathers, is a character worthy of notice in this species, as Vieillot attributes to all the above mentioned genera only ten; but we have reason to believe all the MONASÆ have twelve, and I have found some genuine CAPITONES with the same number.

2. PICUS *rubricollis*, Gmel. Var?

Total length, twelve inches. ***Bill*** perfectly straight, more than two inches long, horn colour above, white beneath: ***feet*** lead colour: ***head*** and ***neck*** brilliant light crimson; the feathers at base blackish, with a narrow yellowish lunule before the red tip, those of the upper part of the head slender and elongated; from the side of the bill a broad whitish stripe, margined above and beneath by a velvet black line, proceeds backwards and is attenuated to a point beneath the auricles; whole ***superior part of the body*** including the ***tail-coverts***, yellowish-cream, some of the feathers having concealed black bands: ***whole inferior surface*** and ***thighs*** of the same cream colour, each feather having four black bands: ***wings***, including the *sca-*

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pulars and *tail*, black, slightly tinged with brown: *quill feathers* widely spotted with yellowish-cream on their inner webs; spots wider in proportion as they are nearer to the base, and assuming at base and on the secondaries and tertials, the appearance of bands: *under wing-coverts* yellowish-cream: *fifth primary* slightly longest.

By comparing the above description with those given of the *rubricollis*, it will be easily perceived that the present specimen differs principally by its smaller size; by its cream-coloured back and rump; by the beautiful bands of the under parts; and by the fine cream colour spots of the quill feathers; this last character, however, is indicated by Vieillot, *Nouv. Dict. d'Hist. Nat.* thus corroborating our opinion of specific identity. The remarkable lateral stripes of the head, are not mentioned by authors, but are correctly represented in Buffon's coloured plate 612, (*Grand Pic hupé à tète rouge de Cayenne;*) this figure, however, differs considerably from our specimen by not having the head and neck half so vivid; the back and whole wing being black, and moreover having the under parts of the same tinge with the head and neck: we would probably be justified in considering this as belonging to a new species, but we prefer for the present to refer it to P. *rubricollis*, being probably a peculiar state of that bird which we think has not been well described or figured in any of its states.

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3. DENDROCOLAPTES *angustirostris.* Vieill.

Fulvo-brunneus; subtus albus, pennis omnibus, gulæ exceptis, utrinque nigro marginatis; rostro elongato, subarcuato, valde compresso.

The genus DENDROCOLAPTES was first established by Hermann; Vieillot has taken the liberty of changing that name to DENDROCOPUS; it is destitute of any fixed character in the form of the bill, yet, in my opinion, it is one of the most natural existing. The acute and rigid tail feathers, (a character common with CERTHIA, to which it is intimately related) but above all, that remarkable character of having the external toe as long as the middle one, will at once distinguish it from all other genera. From the differences in the form of the bill, the species have been separated into a great many sections, which, however, can be reduced to two, from the bill being straight or curved; and even between these, intermediate links occur.

The present species belongs to the second section; it is one of those birds accurately described by d'Azara, and named by Vieillot merely from the description of that author: Vieillot, of course, admitted the species with doubt, and we have, therefore, thought proper to fix it by the following description.

Total length, seven inches and a half.

Bill one inch and a quarter long, slightly curved from the base, slender, very much compressed,

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dusky above, beneath whitish: *feet*, lead colour: *plumage* above, including the *wings* and *tail*, bright reddish-brown, brighter on the *rump* and *tail*: *head feathers* pale in the middle, slightly margined with blackish; a white streak passes over the eye to the auditory region, and returns to the corner of the mouth, including a space of grayish feathers, varied with blackish: *throat* white; whole *neck* and *body* beneath, and *under tail-coverts* white, the feathers margined each side with blackish: *under wing-coverts* light rufous-brown: *humeral margin* whitish: *outer superior wing-coverts* of a somewhat darker brown: *primaries* dark brown for an inch at tip, and with the shafts blackish above, and rufous-white beneath: *shafts of the four middle tail feathers* naked at tip.

4. Fringilla *flaveola*, Linn.

This bird has been long known and was accurately indicated by Linné; Latham has since observed a specimen in the Leverian Museum; but the country which it inhabits was entirely unknown, and doubts had even been entertained of its being a mongrel between the Canary bird and the Goldfinch. A beautiful specimen in my collection puts the question at rest: it is a true species inhabiting Brazil, and probably other parts of South America. The description in authors is remarkably accurate.

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5. TANAGRA *flava*, Gmel.

Sericeo-flavicans; genis, gula, pectore abdomineque medio, alis, caudaque nigris; remigibus, rectricibusque extus virescenti-cæruleis.

Length, five inches and a quarter. *Bill* black above, bluish beneath: *feet* bluish: *general plumage* sericeous straw yellow, lead colour at base; that of the head, blackish at base: *capistrum*, *cheeks*, *lora*, *throat* and a wide patch continued from the throat to the centre of the belly, black: *scapulars*, *wings*, and *tail* blackish, each feather margined externally with sky blue, glossed with golden-green; *greater wing-coverts* especially, with considerable golden reflections: margin of the *first* and *second primaries* obsolete; that of the others, narrow, but very bright, and of a purer sky blue; *secondaries* bluish-green almost upon the whole of their outer web; *inner webs* at base, margined with whitish; *shafts* of the *wings* and *tail* black above, and whitish beneath; *under wing-coverts* and *interior side* of the *primaries* beneath, silvery; the former intermixed with dusky.

This fine bird belongs to the genus and subgenus TANAGRA. It is evidently the *Lindo bello* of d'Azara, judging by the description of that rare species, a single individual only of which was observed by that author, who described it accurately under the above mentioned name; of this species

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Vieillot has made his TANAGRA *formosa*, without having seen it; but as the indication of TANAGRA *flava*, that we find in authors, seems to us equally applicable to our bird, we have preferred the prior appellation. If we are correct in our conjectures, the *Guira perea*, (TANAGRA *flava*) a much suspected species, is now fully ascertained, and doubts of its being a real Tanager can no longer be entertained. We should also be inclined to suppose that the Brazilian bird in the Paris Museum of Natural History, named by Vieillot TANAGRA *chloroptera*, will prove to be the same species.

A figure given by Mr. Desmarest in his work on Tanagers, as the female of TANAGRA *cayana*, resembles considerably our species.

6. MUSCICAPA *violenta*, Nob.

Cauda semi-pedali valde forficata; corpore cinereo, subtus albo; capite nigro, verticis pennis basi flavissimis.

I mentioned this bird in the first volume of my American Ornithology, when exemplifying the MUSCICAPA *savana;* but not having specimens to compare, I only stated, that it was distinguished by its smaller size from that fine bird: now having the good fortune to have before me two very perfect individuals, I shall proceed to describe the species and point out the differential

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characters by which it may be separated from its close relative, the *savana*. This will, I hope, be the more acceptable to naturalists, as Vieillot, who at first confounded the two species, and afterwards established the present under the name of TYRANNUS *violentus*, never saw the bird, but was in both instances guided by the statements of d'Azara.

Total length ten inches. *Bill* and *feet* black: *upper* and *lateral parts* of the *head* with the beginning of the neck, velvet-black; the feathers of the *vertex* golden-yellow towards the base, forming a concealed spot; remaining *upper parts* gray, slightly tinged with brown, darker on the *rump*, and passing into blackish on the *superior tail coverts*; all the *inferior surface* pure white: *wings* brownish; feathers, both *quills* and *coverts*, edged exteriorly with whitish: *four first primaries* subequal, the *second* slightly longest; these are quite full and rounded without any kind of emargination in one specimen, whilst in the other, they are terminated in a slender process, as in my *savana*; a circumstance which leads us to believe that this character, as well as the remarkable tenuity of the outer web of the exterior tail feather, is proper to the male in both species: *tail* six inches long, brownish-black: *exterior tail feather* white on the outer web for half its length from the base, surpassing, by more than two inches, the adjoining,

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and by more than three inches and a half the middle ones.

By comparing this description with that of Muscicapa *savana*, it will be evident, that, besides the dimensions, this smaller species is easily distinguished by having the crown-spot golden yellow, without any intermixture of orange. The cinereous of the back is also less pure, but the other colours and markings are similarly distributed.

I should now be inclined to believe Buffon's wretched coloured plate rather taken from this bird than from the *savana*, although his description most certainly belongs to the latter species.

The habits of this bird, thanks to d'Azara, are better known than those of the *savana*. An account of them may be seen in the interesting book of the Spanish author, from whom Vieillot has given an extract.

7. Muscicapa *tænioptera*, Nob.

Cinerea, alis caudaque nigris; gula, abdomine, alarum fascia lata, caudæque apice albis.

This species is not entirely new, yet it gives us more gratification to be enabled to elucidate the obscurity involving it, than to describe an entirely unknown bird. It is the most common of six *Pepoazas*, inhabiting Paraguay, described by d'Azara. Though most accurately described, these birds have much puzzled naturalists, who were

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uncertain to which established genus they ought to be referred, or whether they would properly form a distinct genus by themselves. Vieillot has acted fairly in this case by not naming a bird which he had not seen;* a great many errors in science are to be attributed to the censurable habit of following a contrary course. "I have placed," says he, in the *Nouv. dict. d'Hist. Nat.* "the PEPOAZAS of Mr. d'Azara, after the TYRANTS, because they have appeared to me more closely related to them than to any other genus, and until their generic characters are better known." The conjectures of Vieillot have proved correct, at least in regard to this species; which is a MUSCICAPA of our classification, but a TYRANNUS of his: a peculiar subgenus might be instituted for it under the name of the species, which we have for that reason compounded from the Greek. This subgenus should be characterized principally by long and powerful wings, reaching nearly to the tip of the tail, a somewhat more robust and elongated bill, and much stouter and longer feet. It is most probable that the five other *Pepoazas* of d'Azara will also prove to belong to this subgenus. The habits described at some length by that author are also different; we shall not transcribe

* We take no notice of a slight indication he gives of this bird, under the name of TYRANNUS *cinereus*, in his *Analise d'un Nouv. Syst. d'Orn.* as he has since changed his mind, and his name is pre-occupied in MUSCICAPA.

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them here, but although his description is remarkably minute and accurate, as it has fallen to our lot to establish the species, we will describe the specimen before us.

Total length, eight inches and a half. ***Bill*** one inch and a quarter long, and with the ***feet*** black: general colour ***above*** dark gray, deeper along the shafts of the feathers, principally on the ***head;*** a white broad line extends each side from the nostrils over the eye; a narrow blackish line passes through the eye, margined beneath by a white one dilated on the ***auricles***, and divided under the eye into two branches, including a blackish line; from the inferior angle of the lower mandible proceeds a well defined deep black line neatly margining the ***throat***, which is pure white: ***breast*** pale cinereous, which colour slightly tinges the ***flanks***; ***belly*** and ***inferior tail-coverts*** pure white: ***wings*** broad and long, reaching within three quarters of an inch of the tip of the tail; ***first primary*** subequal to the fourth, and but little shorter than the third, which is longest; ***smaller wing-coverts*** dusky; ***middling coverts*** blackish, widely pale gray at tip; ***greater coverts*** and ***tertials*** blackish, margined with whitish; ***primaries*** deep black, slightly whitish at tip, and pure white at base; this colour is much confined on the first primary, but extends more and more on the succeeding feathers, until the ninth and tenth are totally white; this arrangement produces on the wing a broad white

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band, which dilates by degrees towards the body: *shafts* entirely black; *secondaries* black, white at tip; *under wing-coverts* very thick and long, and of a glittering white: *tail* even, black, dull whitish for three quarters of an inch at tip; *exterior plume* also whitish on the principal part of the outer web.

8. Muscicapa *pullata*, Nob.

Cinerea; alis caudaque forficata nigris; rectrice extima latere exteriori alba.

Total length, eight inches. *Bill* three quarters of an inch long, and nearly half an inch wide at base, black as well as the feet: *general colour* slate-gray, lighter beneath than above: *head* with a few obsolete dusky streaks along the shafts of the feathers: *throat* and *under wing-coverts* whitish: *whole wings*, *superior tail-coverts*, and *tail* brownish-black: *wings* when closed, reaching to the middle of the tail; *primaries* rather slender at tip; *first* equal to the seventh, *third* and *fourth* longest: *tail* four inches long, deeply forked; *outer web* of the exterior feather white, to within half an inch of the tip.

From the great width of its bill, this new species belongs decidedly to the genus Platyrhyncos of Desmarest, and no doubt Vieillot and most other Ornithologists, will consider it as such. I would, therefore, have called it Platyrhyncos *pul-*

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latus, were I not fully satisfied that it is as improper to separate *Platyrhyncos* from MUSCICAPA, as *Coccothraustes* from FRINGILLA. These, in my opinion, are subgenera and not genera.

9. CAPRIMULGUS *semitorquatus*, Gmel.

Nigricans rufo albidoque minutissime punctatus; remigibus quatuor primis immaculatis medio fascia obliqua rufa; collo subtus lunula alba.

I refer to this imperfectly known species, a specimen of which I might as well constitute a new species. If, however, Buffon's Pl. Enl. 734, intended for C. *semitorquatus*, be not excessively bad, it will be impossible to believe that our bird belongs to that species, and from the remarkable length of the bill, I should propose for it the name of CAPRIMULGUS *longirostris*. Be this as it may, a description will certainly prove interesting to naturalists, as a mere indication has been given of the *semitorquatus* which has, besides, been erroneously considered by some writers as a variety of C. *grandis*, a bird from which it is even subgenerically distinct.

Total length, rather more than nine inches. *Wings* reaching two-thirds the length of the tail: *bill* one inch and a quarter long, and with the *feet* dusky: *tube* of the *nostrils* rather elevated: *bristles* around the bill remarkably stiff and large, much longer than the bill: *nail of the middle toe* very

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profoundly pectinated; the *teeth* somewhat cartilaginous: *head, neck* and *body* above, *scapulars*, and *smaller wing-coverts* black, spotted with bright ferruginous-rufous, and sprinkled all over with whitish; the rufous spots brighter and thicker set on the *head, scapulars*, and *rump; upper portion of the back* almost destitute of them; at the junction of the neck and body these spots are of a paler tint, larger, and regularly disposed so as to indicate a kind of collar: *space between the bill* and *eye*, and *throat*, pale rufous, varied with some black: *neck* beneath with a concealed white semicollar, the feathers of which are tipped with pale rufous: *breast* and upper portion of the *belly* blackish, varied with transverse, narrow, undulated bands of whitish and pale rufous: *belly, flanks, vent*, and *under wing-coverts* very pale rufous, somewhat intermixed with blackish: *inferior tail-coverts* of the same colour, almost immaculate: *middling* and *greater wing-coverts* blackish, sprinkled with whitish, and with a pale rufous spot at tip; *quill feathers* blackish, four outer ones with a single yellowish-rufous oblique band at the middle of their length; remaining ones slightly sprinkled, and with several yellowish-rufous spots or bands on their inner web: *wings* reaching two-thirds the length of the tail: *tail* even, deep blackish; *the feathers* crossed with about nine large bands, formed by whitish dots, becoming pale rufous on the margin and at tip of the feathers: *lateral feathers*

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three or four banded, with plain pale rufous on the inner webs; the *two outer ones* with a large pure white square spot on the inner web at tip.

We do not know the sex of this bird; and if a male, (which seems probable) we may infer that the female is destitute of the pure white semicollar and tail spots, they being, probably, pale rufous.

10. Rallus *nigricans*, Vieill.

Fusco-ardosiaceus, dorso alisque brunneo-olivaceis, uropygio caudaque nigris.

Total length, thirteen inches and a half. *Bill* more than two inches long, appearing to have been of a delicate apple green; the feet were probably red: *naked space above the heel*, (knee) nearly one inch; *tarsus* two inches and three quarters long; *middle toe* two inches and a half; *lateral ones*, two inches; *posterior one*, one inch long: *head* above, dark bluish-slate; *neck* above, brownish: *back*, *scapularies*, and *upper wing-coverts* bright greenish-brown; *whole plumage* at base, blackish-slate: *throat* whitish-slate: *sides of the head* and *neck*, and inferior part of the latter, pale slate; *breast*, *belly*, *flanks*, *vent*, and *thighs* slate-colour; *inferior tail-coverts* black: *rump* and *tail* deep black: *wings* reaching exactly the tip of the tail, furnished at the base of the spurious wing with a strong spinous process turned backward and adpressed to the wing; *inferior wing-*

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coverts of a beautiful chesnut, banded with black; *quill feathers* dusky, tinged with ferruginous; *secondaries* edged externally with olive-brownish.

This species belongs to the genus and subgenus RALLUS, having the bill longer than the head, and the winglet furnished with a spine like RALLUS *aquaticus*, *virginianus*, &c. It is the *Ypacaha-obscuro* of d'Azara, of which Vieillot has constituted his RALLUS *nigricans*; but as this latter author has never seen the bird, and some characters are overlooked, we have thought proper to fix the species by the above description. Although Vieillot's name is not appropriate, we do not avail ourselves of our right to give the bird a new one, thinking that nothing is so detrimental to science as a complicated synonymy.

Descriptions of two new species of MEXICAN BIRDS. *By* CHARLES BONAPARTE. *Read April* 27, 1825.

CORVUS, Linn.

Subgenus *Garrulus*, Briss.

C. *ultramarinus*. Cœruleus subtus cinerascenti-albidus, cauda equali.

Length, thirteen inches. *Bill* one inch and a

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half long, strongly notched at tip, and with the feet black: *incumbent setaceous feathers* of the base of the bill, partly black and partly blue; whole *plumage* above, including the *wings* and *tail*, bright azure, most vivid and somewhat sericeous on the head and tail coverts, duller and slightly intermixed with dusky on the back: *inner webs* and tips of the *quill feathers* dusky: *shafts* of the wings and tail feathers black: *lora* black; *cheeks* dull blackish-blue; *chin* whitish, intermixed with black bristles; *whole inferior surface* dirty whitish, more tinged with cinereous on the anterior parts, and becoming purer towards the vent: *inferior wing* and *tail-coverts* slightly intermixed with blue; *inferior surface* of the *wings* and of the *tail* dusky-gray, the latter darker: *wings* when closed, reaching almost to the middle of the tail, which is seven inches long, and perfectly even at tip.

Amongst the numerous blue Jays and blue Magpies described by different authors, and magnificently figured of late, the pretensions of the present bird to novelty, will, at first glance, be doubted; yet it differs from all by some of its positive and negative characters, and from the greater number by not having any white on the tail, nor black on the head; the most closely allied species is certainly the Florida Jay, (Corvus *floridanus*, Bartr.) very perfect specimens of which have just been brought home by Mr. T. Peale, amongst

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other valuable objects of Natural History. Mr. T. Peale has drawn on the spot that fine bird, which was not noticed by Wilson; and his drawing will embellish the second volume of my American Ornithology. The present species comes so near to it as not to be immediately distinguished, but its larger size and principally its even tail, prove it a distinct species; the back, though also somewhat intermixed with dusky, is bluer than that of the Florida Jay, and indeed the whole azure colour is somewhat more brilliant; the bluish collar is wanting, and the under tail-coverts are much less tinged with blue; the wings are moreover proportionally longer.

Icterus, Briss.

Subgenus *Cassicus*, Lacep.

Icterus *melanicterus*. Niger cristatus; uropygio, tectricibus alarum, crisso, caudaque luteis; rectricibus, mediis totis, lateralibus exteriori margine, nigris.

Male. Length eleven inches and a half.

Bill three quarters of an inch long, pale bluish-white: *feet* blackish: *general plumage* glossy black: *front* with a crest of slender, recurved feathers, two inches long: greater part of the *wing-coverts*, lower portion of the *back, rump, superior* and *inferior tail-coverts*, bright yellow: *tail* rounded: *middle feathers* entirely black, yellow only under the

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coverts; remaining *feathers* yellow, the *two* or *three outer ones* blackish on their exterior web.

Female one inch less than the male, and perfectly similar in disposition of colour; dusky-blackish where the male is black, and the yellow colour less vivid: *crest* much shorter and less obvious; the small feathers behind the nostrils, in our specimen, are spotted with dull yellowish: all the *lateral tail feathers* blackish on the outer web; the *fifth* on each side entirely margined with that colour.

This species is most closely related to ORIOLUS *persicus*, Linn. (CASSICUS *icteronotos*, Vieill.) but the remarkable crest and different disposition of the yellow and black on the tail, the feathers of which in that species are all yellow at base and black at tip, prove it specifically distinct; the bill is besides somewhat longer and more compressed at tip.

With these birds, which were sent from Mexico by Dr. Samuel M'Clellan, was received a specimen of the interesting FRINGILLA *grammaca*, Say, figured in the first Volume of my Am. Orn., thus corroborating the opinion that the birds of the Rocky Mountains are also inhabitants of Mexico.

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Shells, eleven species, from the West Indies.	Dr. Hays.	
Minerals, five specimens, from Connecticut.	G. Bowen.	February.
Sciurus cinereus.	W. Stewart.	
Brown iron ore, from Barnhill Church, Montgomery county, Penn.	Z. Collins.	
Shells, fossil, twenty-eight specimens from the chalk formation in England.	N. Ware.	March.
Cone of the Pinus Australis.	R. Haines.	
Shells.	G. Ord.	April.
Collection of East Indian spices and Chinese squirrel.	Dr. Harlan.	
Skin of the Moschus moschatus.	J. Archer.	
Minerals, four specimens, from Rhode Island.	M. Brown.	
Manganesian Garnet from near Germantown.	G. Spackman.	
Crystal of Epidote from Virginia.	A. Dupont.	
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Two bottles of marine animals from the Gulf stream.	G. Bedwell.	May.
Coral, (large specimen.)	J. Robbins.	
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Flower of the Chiranthodendron, and a specimen of the Prionus longimanus.	J. Lea.	June.
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Diseased egg.	J. Gilliams.	
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Sepiola, found in the stomach of a Scomber thynnus, from the Indian ocean.	J. Read.	
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Fossils, forty-three specimens, from the Lehigh.	Dr. R. E. Griffith.	
Shells, twenty-eight species, from the West Indies.	F. Brown.	July.
Salamandra venenosa from Penn.	Dr. Harlan.	
Alasmodonta arquata.	W. Stewart.	
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Venus mercenaria from Charleston harbour, South Carolina, (very large specimen.)	Lt. Graham.	
Venus litterata, American coast.	R. Haines.	
Minerals, five specimens from Edenton, North Carolina.	J. R. Smith.	
Insects, nine species; Asteria, one species; Spongia, three species; Shells, eight species; Echinus, seven species, from Matanzas, Cuba.	Lewis Vanuxem.	August.
Esox.	J. Gilliams.	

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The Academy have great pleasure in acknowledging the donation of Plate III, from Mr. J. Gilliams; Plate XVII, from Mr. W. W. Wood, and Plate XXII, from Mr. Ord. Mr. Ord has likewise, with great liberality, permitted the use of Plates XX. and XXI.

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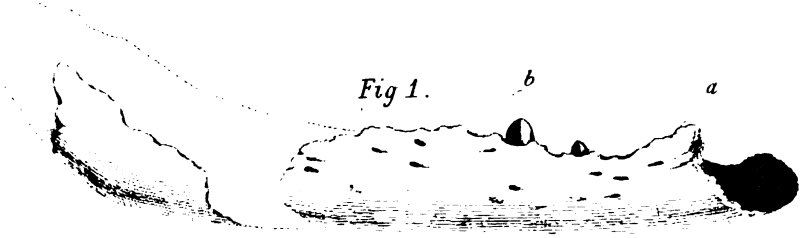


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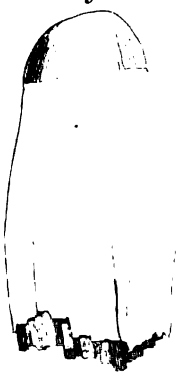


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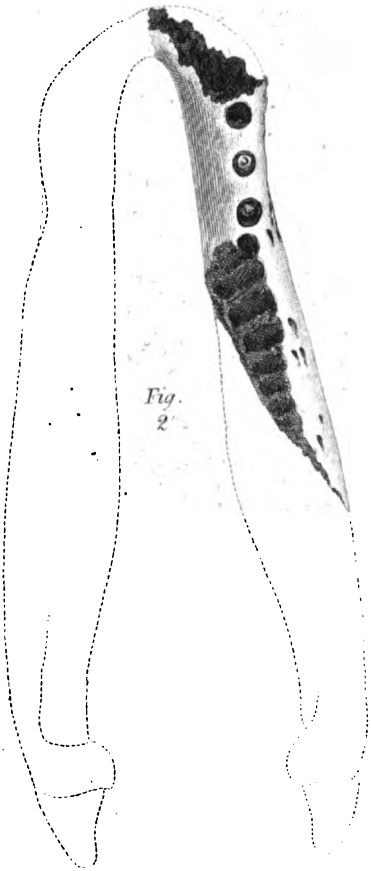


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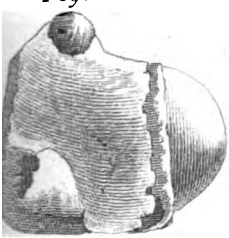


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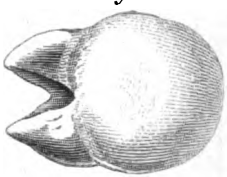


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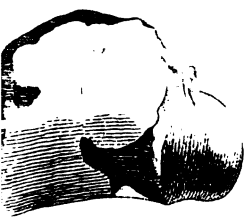
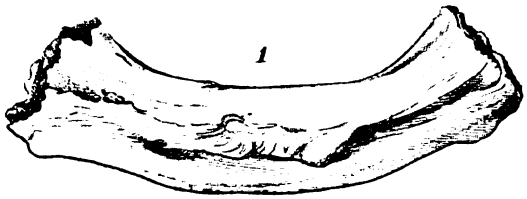


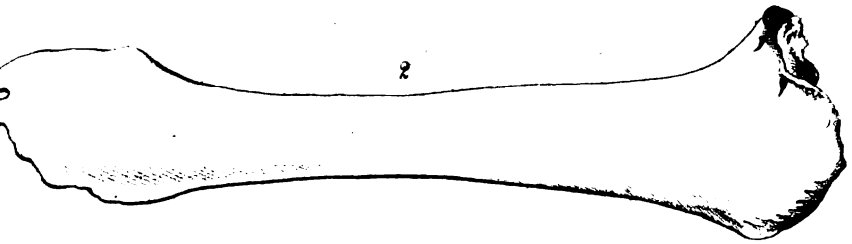
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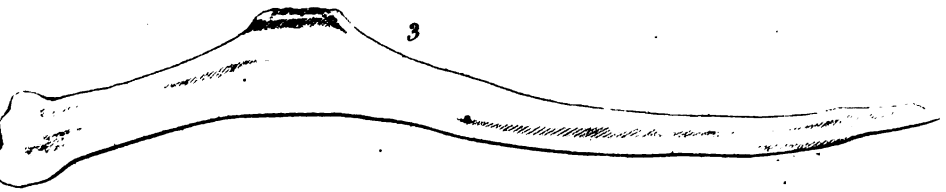


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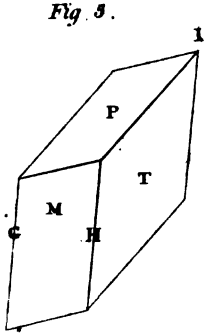
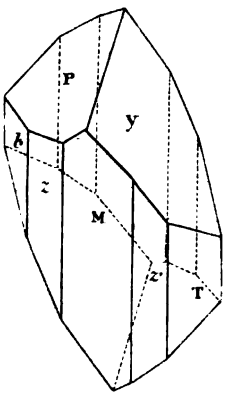


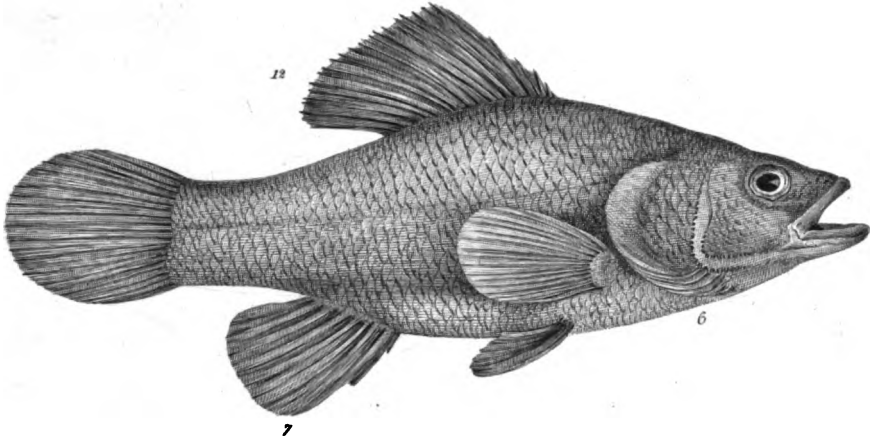
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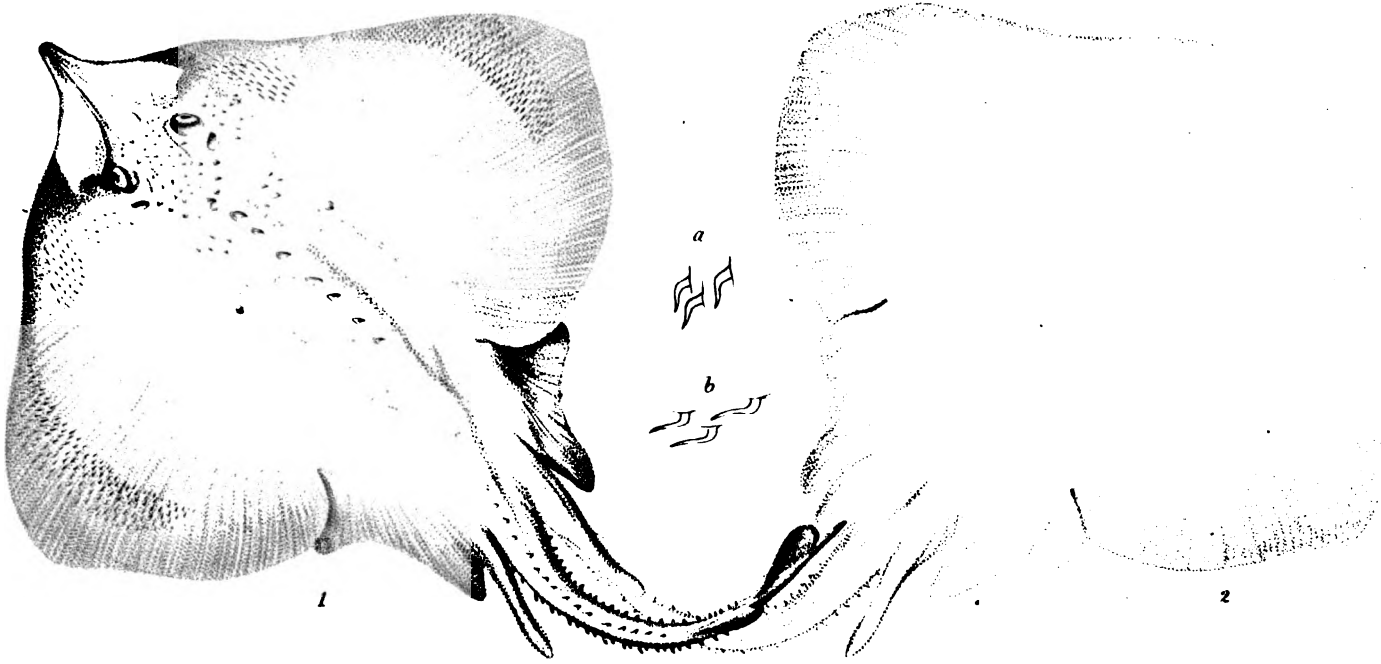
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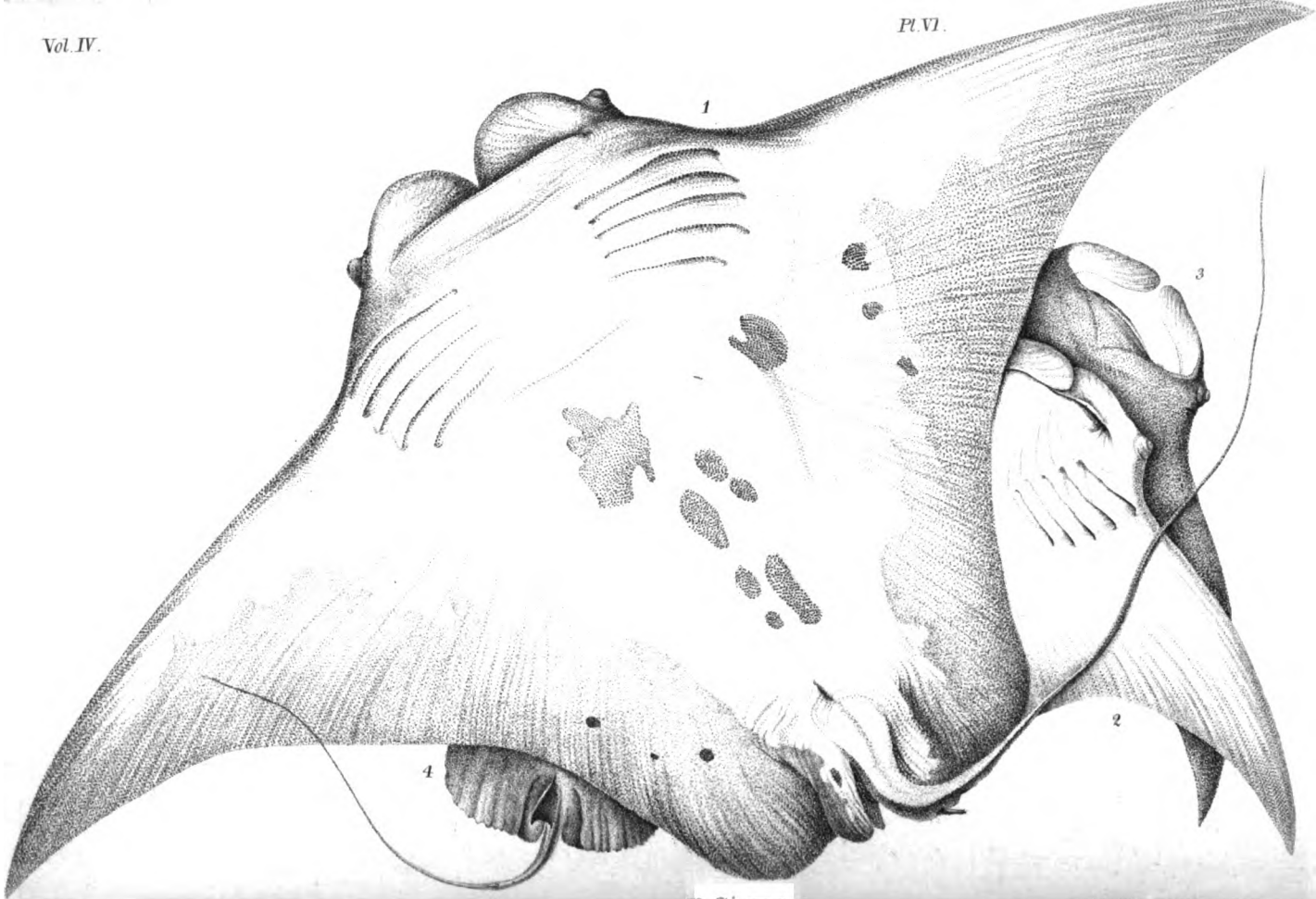


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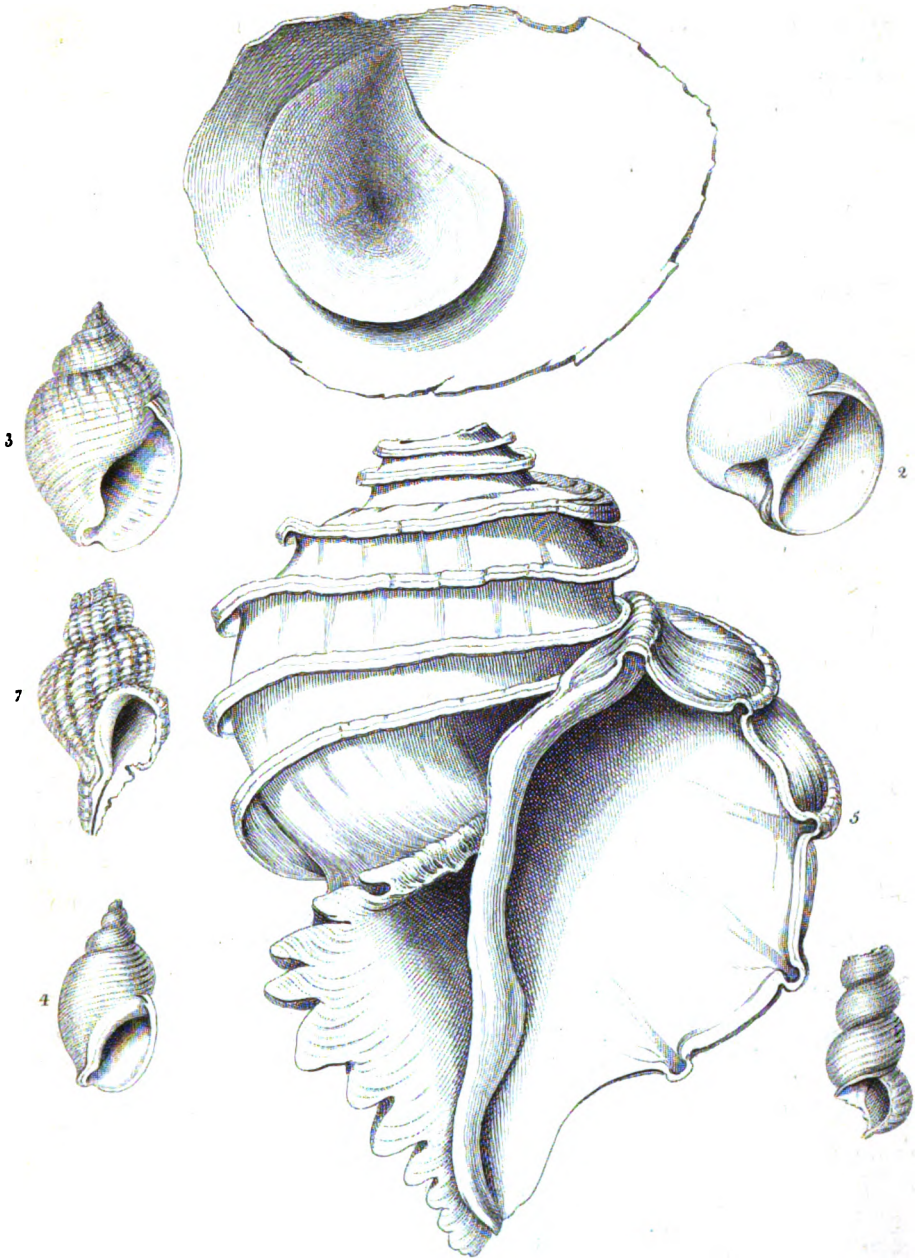
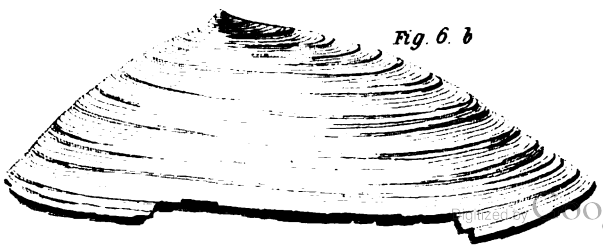
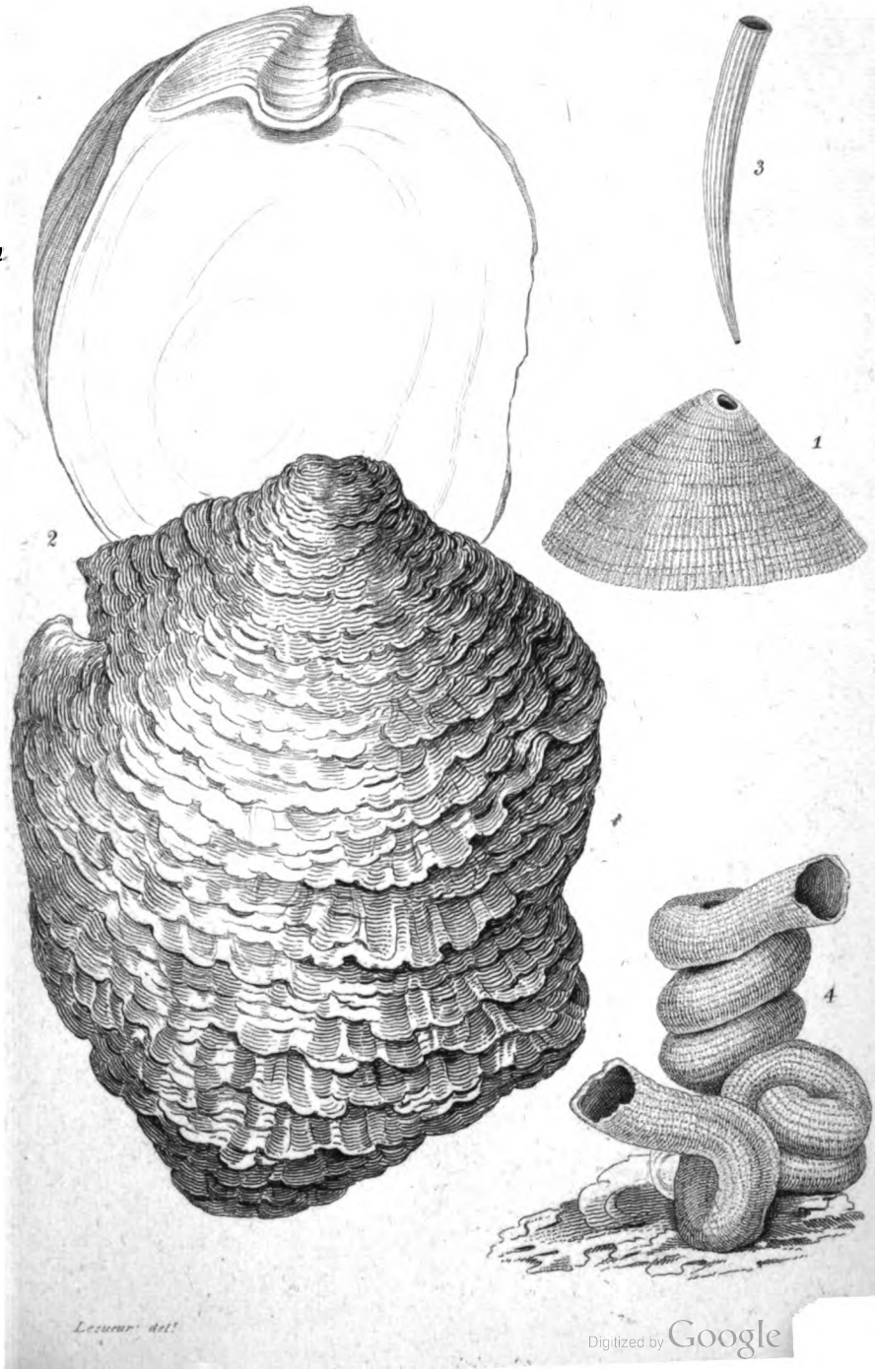


Fig. 6. b



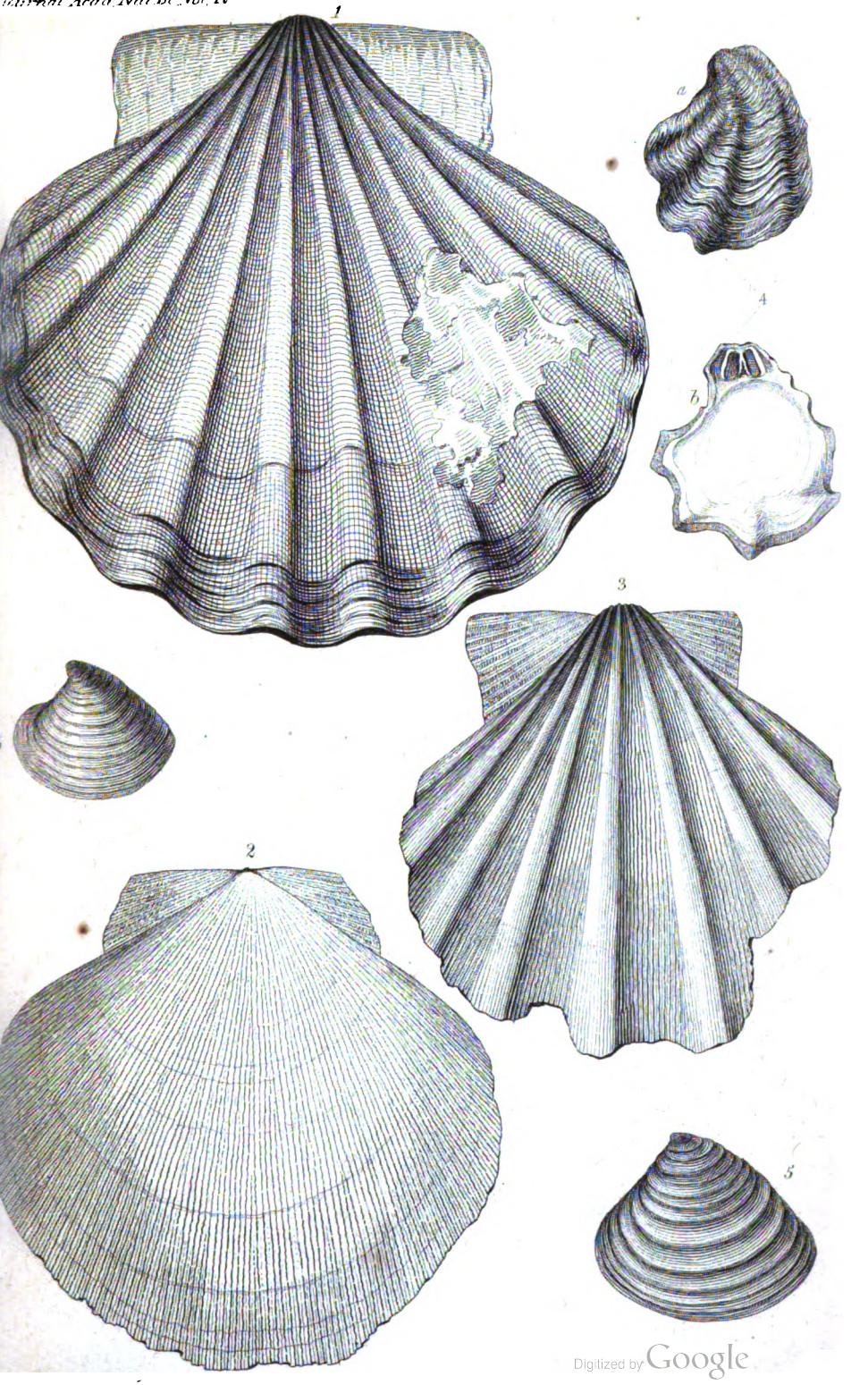
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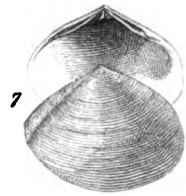


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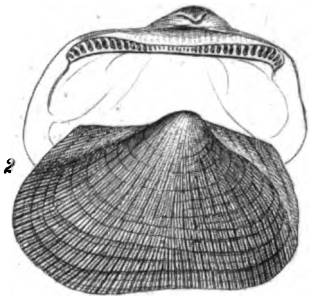
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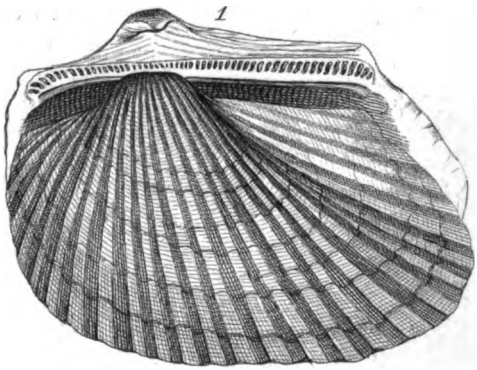


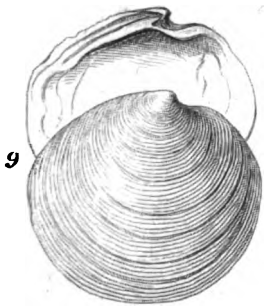


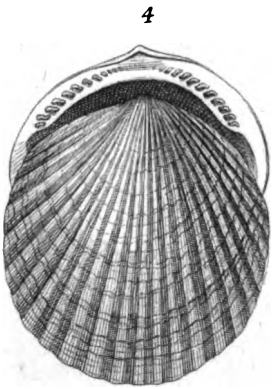


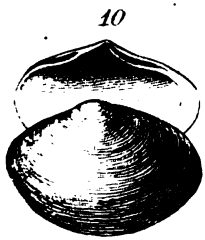


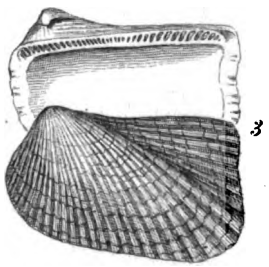












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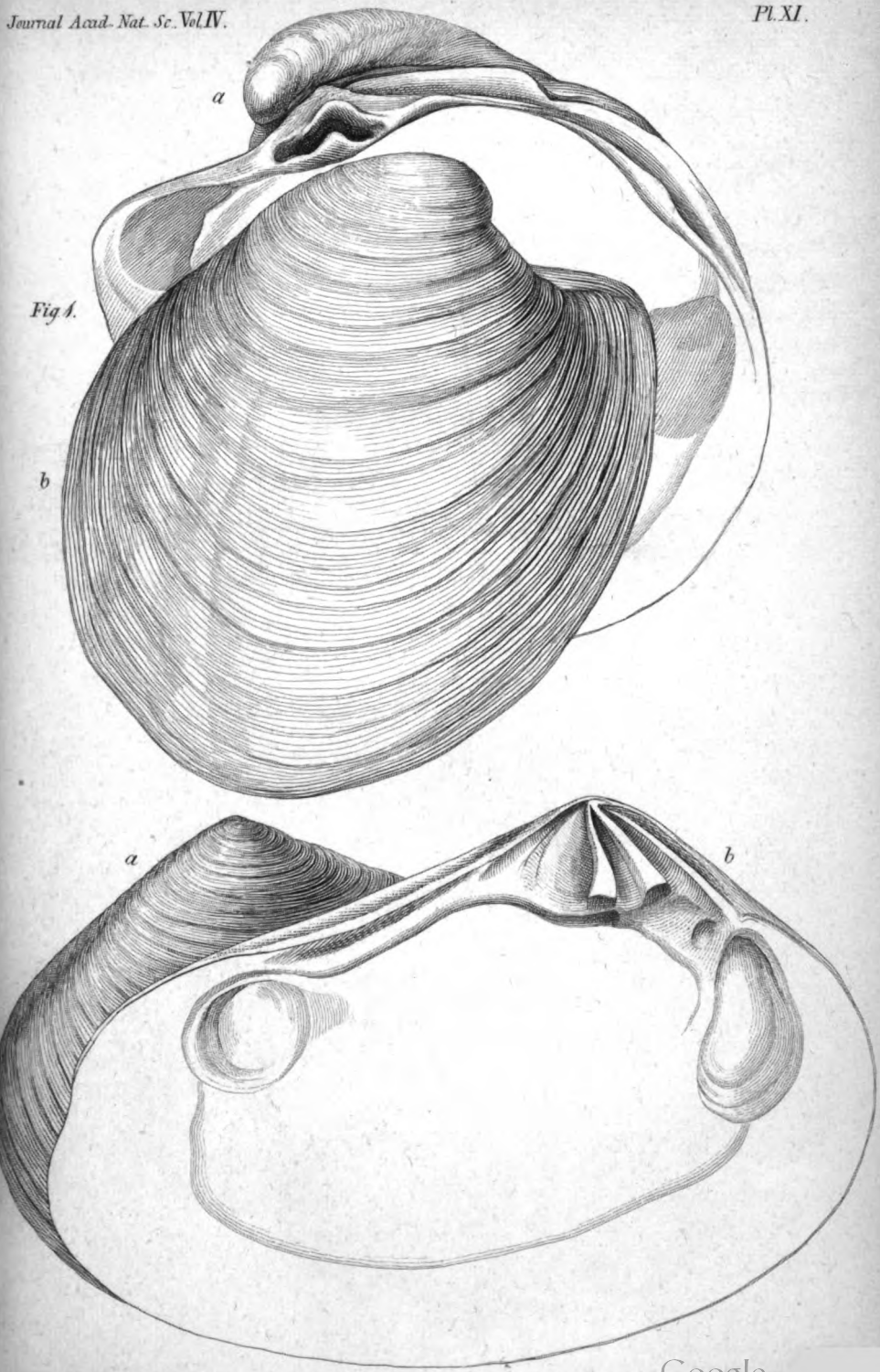
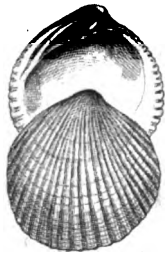


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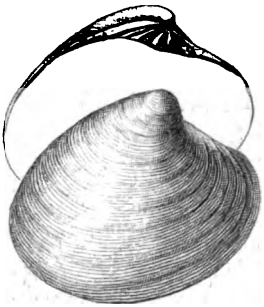
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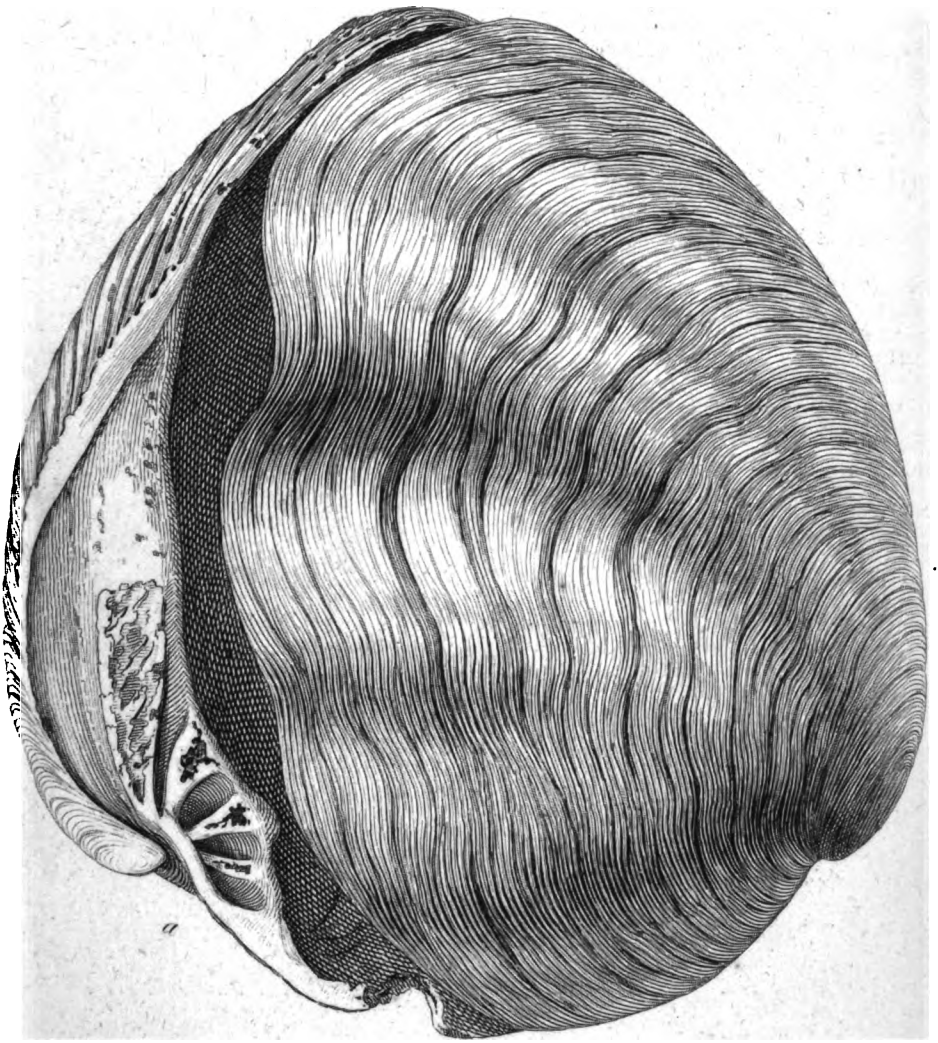
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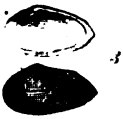
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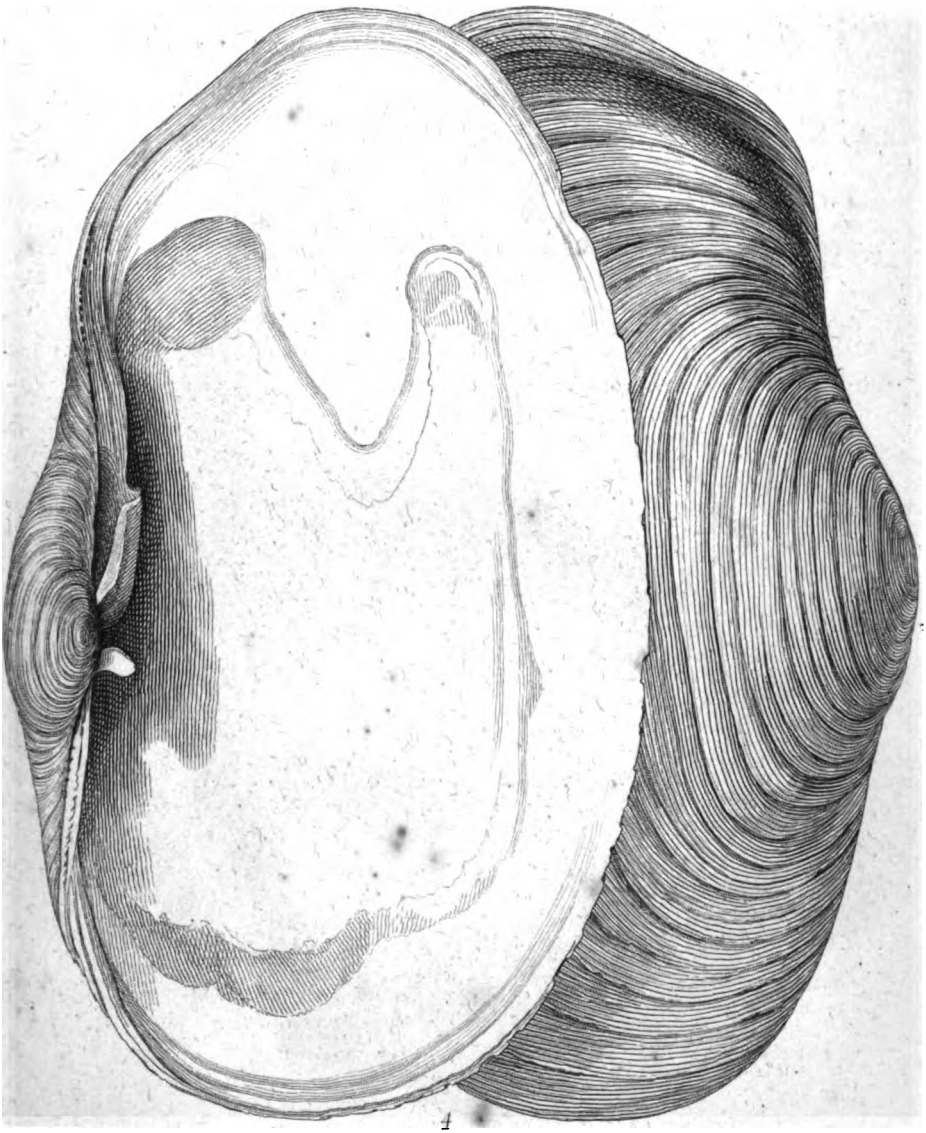
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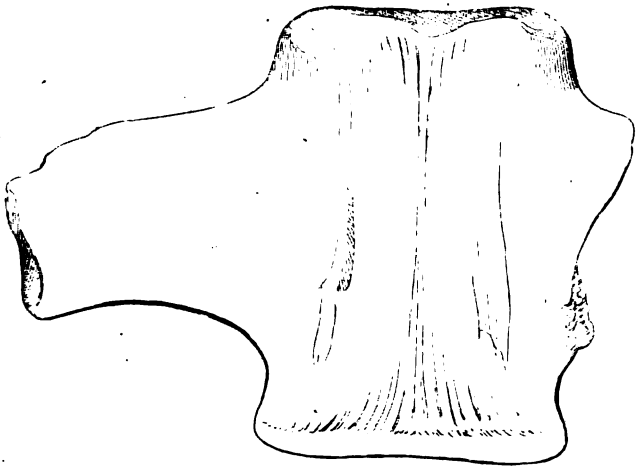


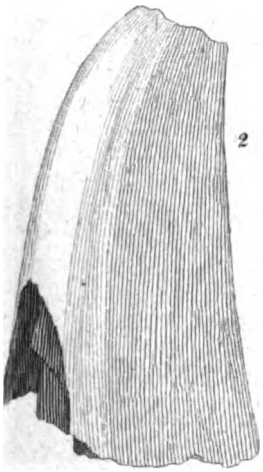
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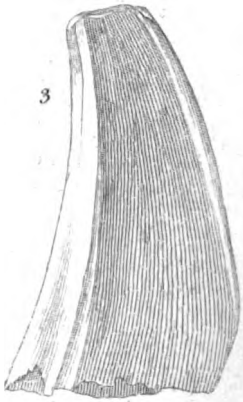




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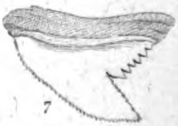
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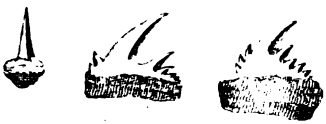
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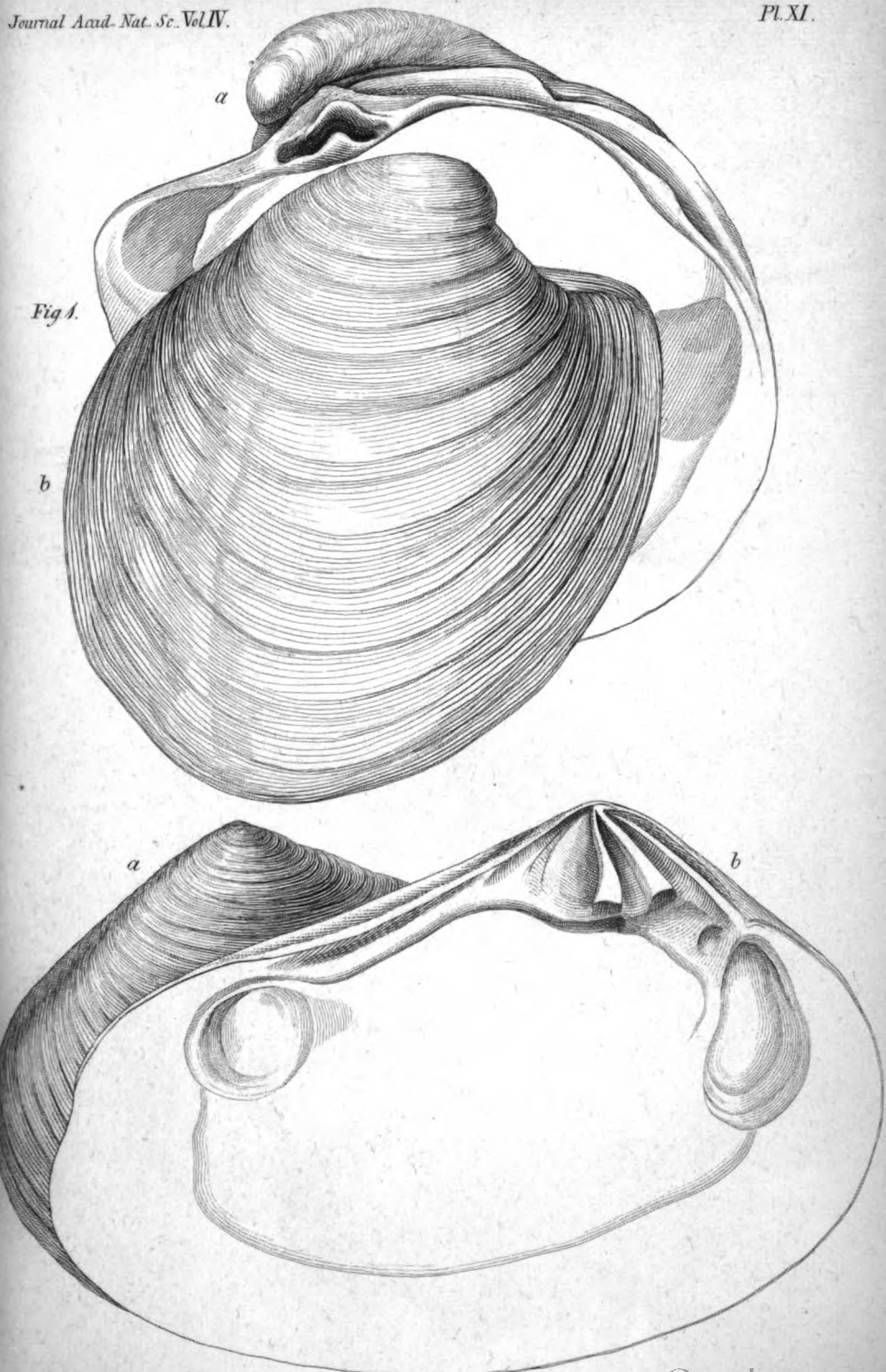
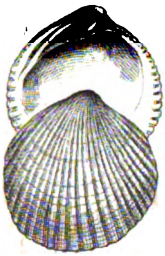


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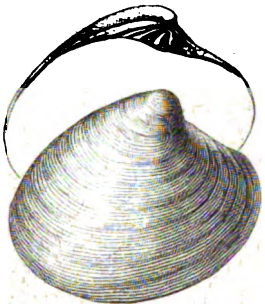
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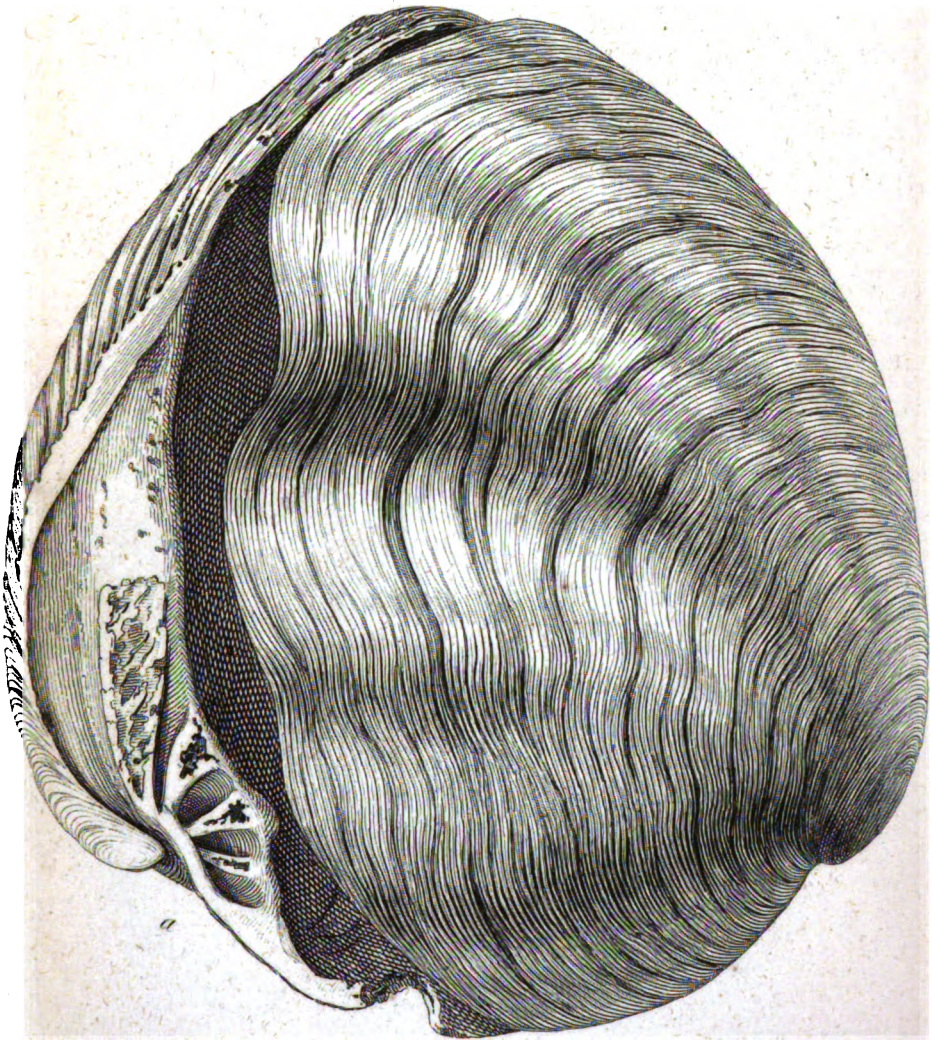
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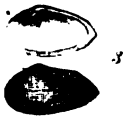
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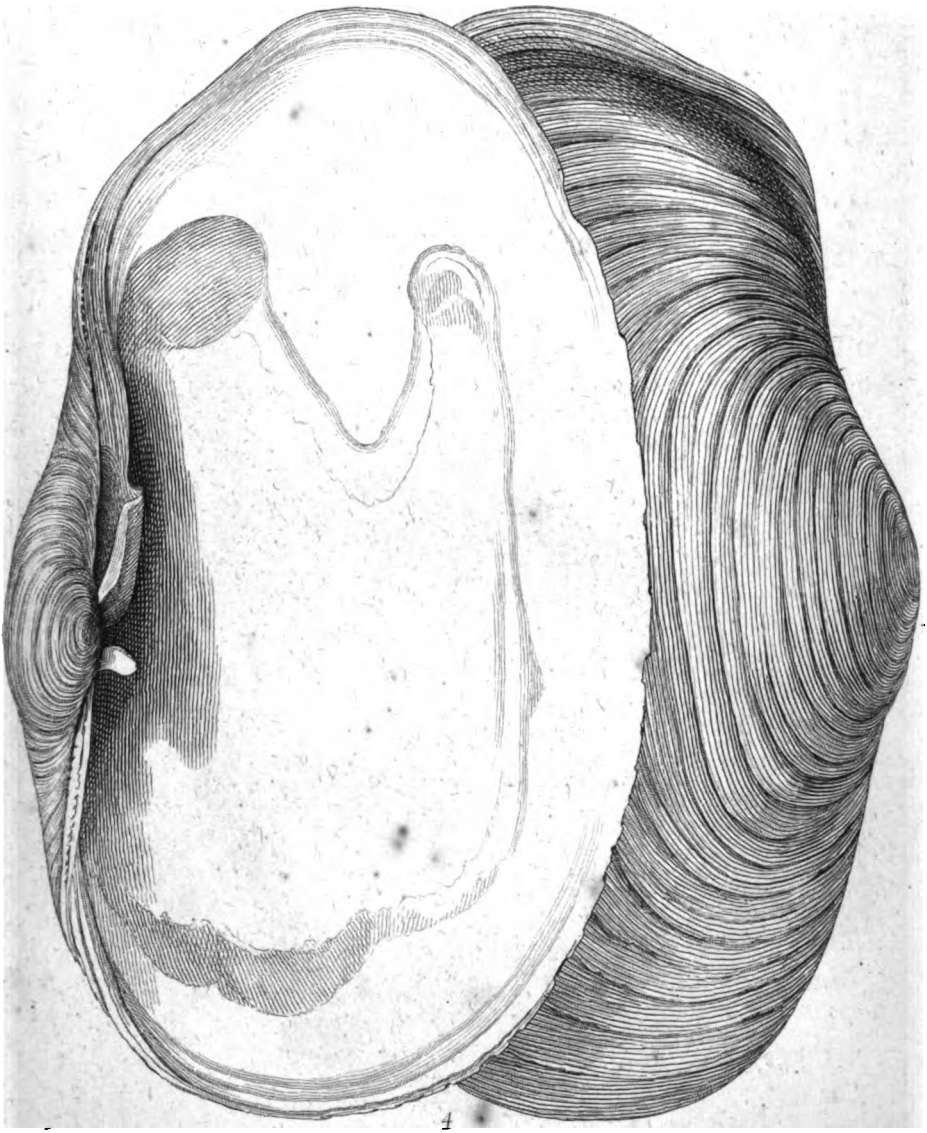
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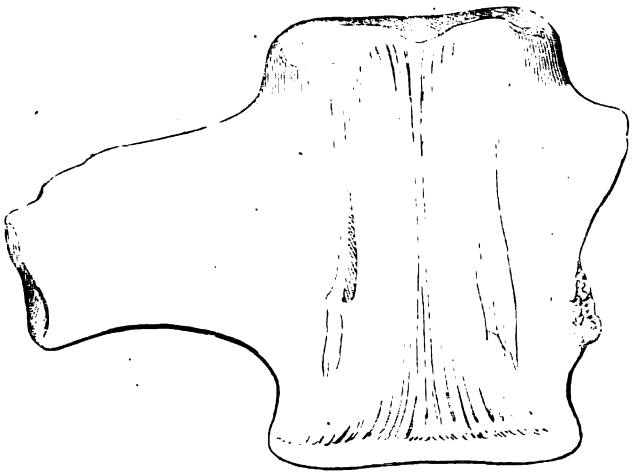


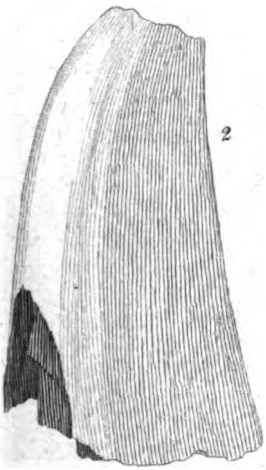
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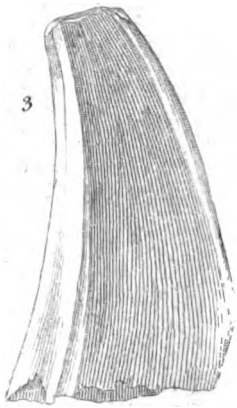




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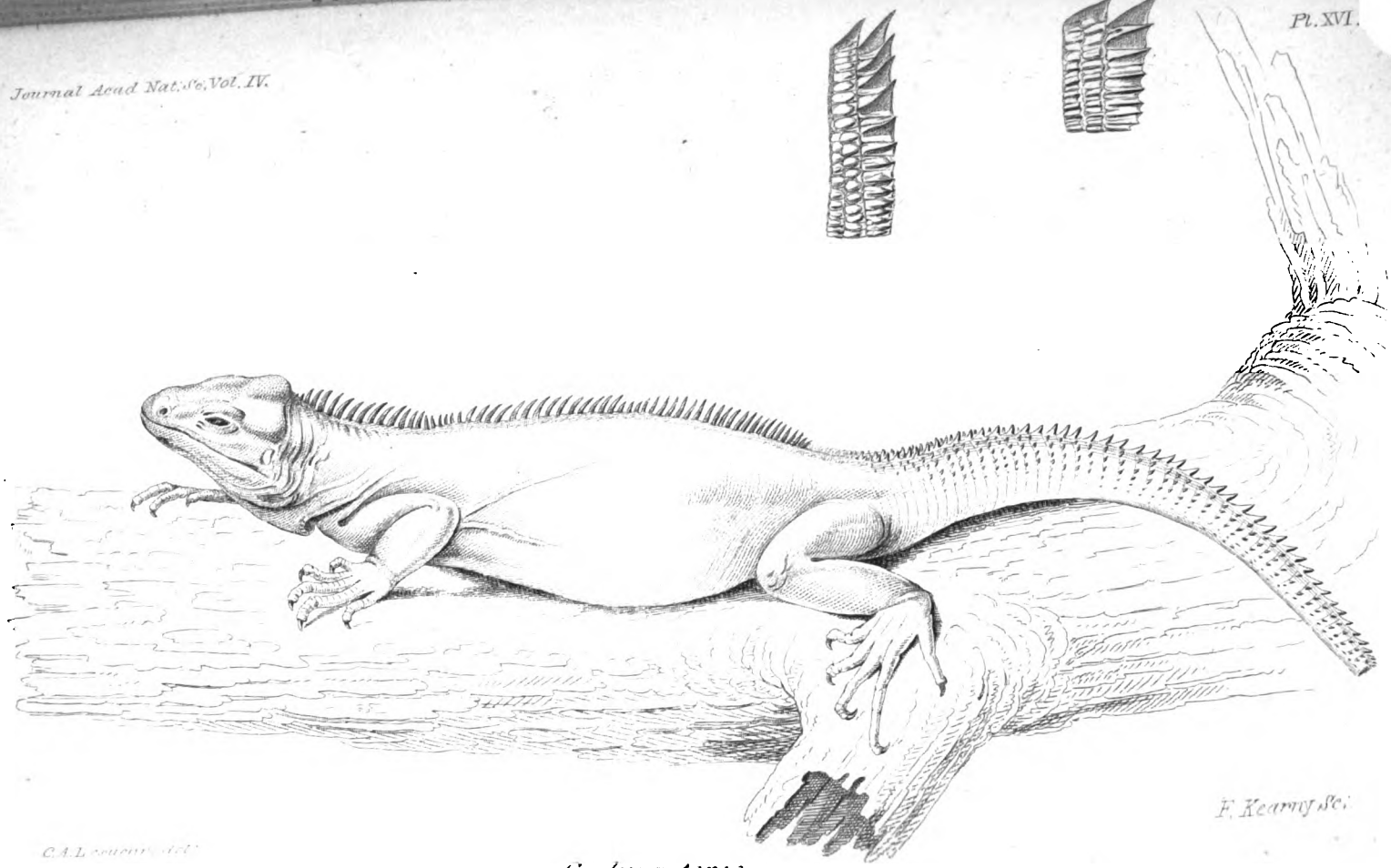
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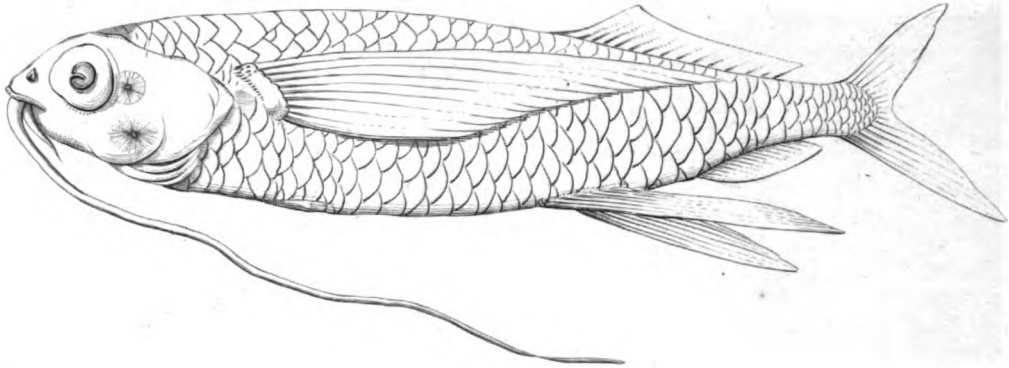
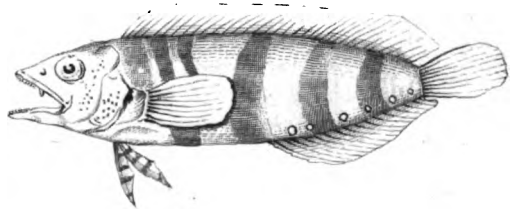


Fig. 1

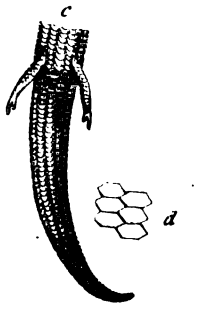




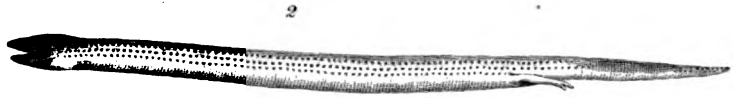


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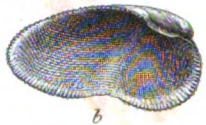


W.W. Wood. dn.

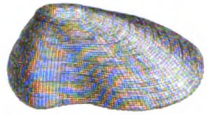
F. Kearny Sc.

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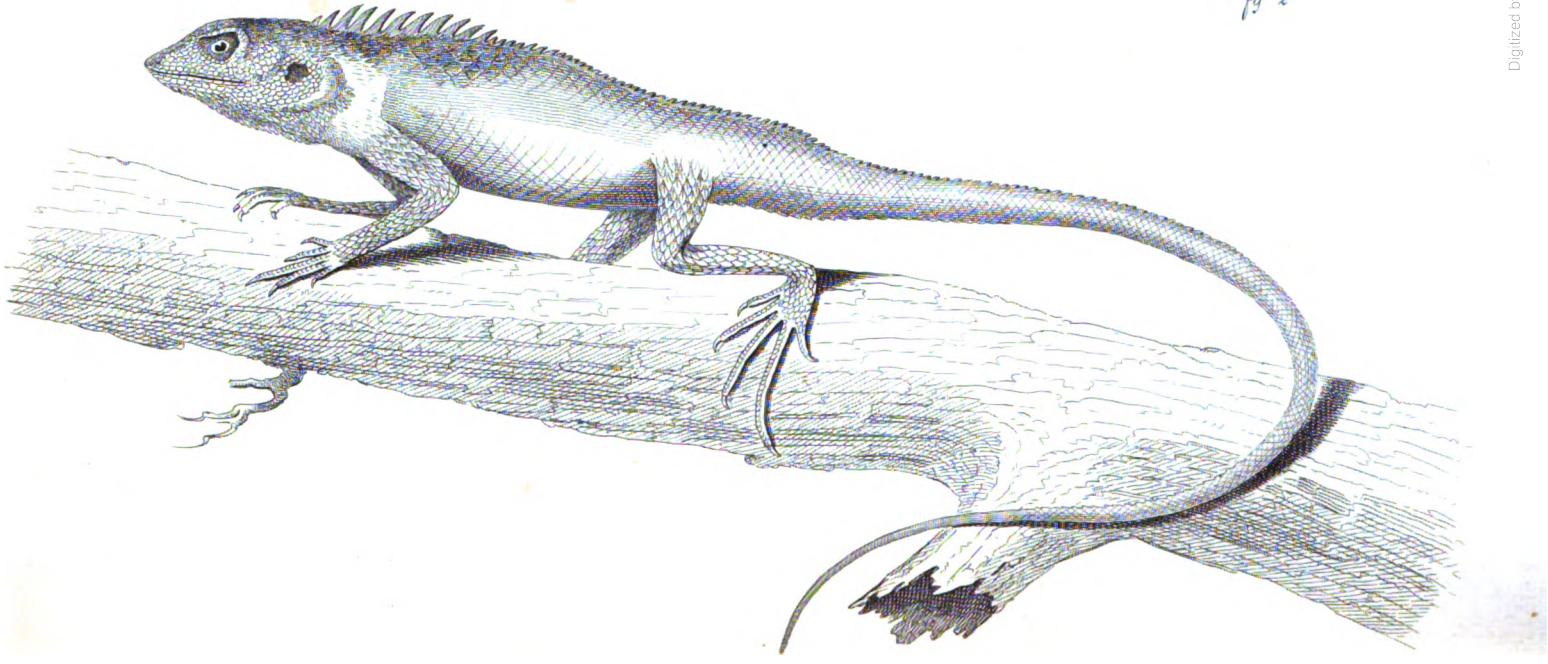
b



a



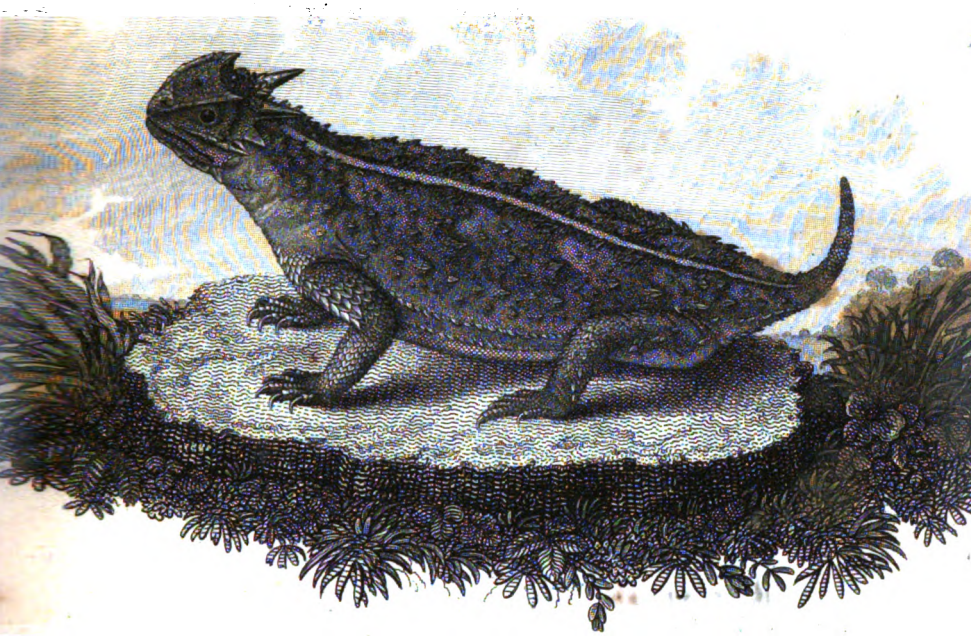
fg 2

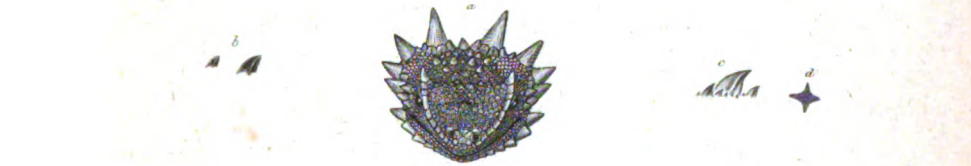


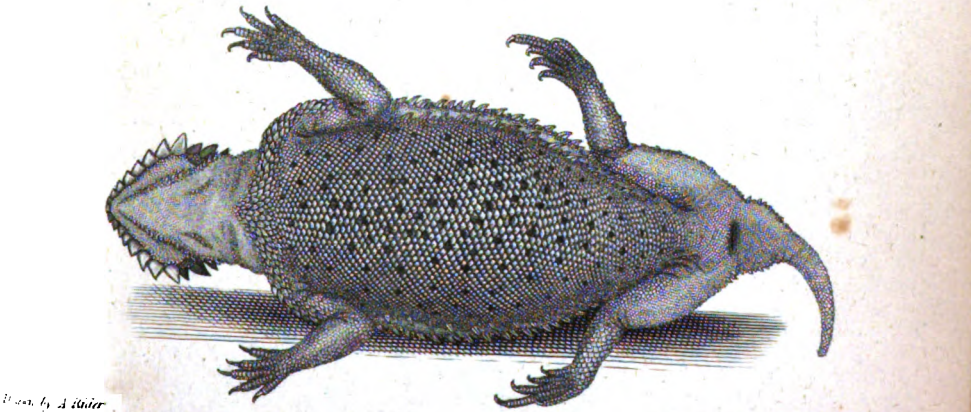
Agama Vulturea

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Engraved by A. Lawson Philad.ª

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Drawn by C. A. Lesueur.

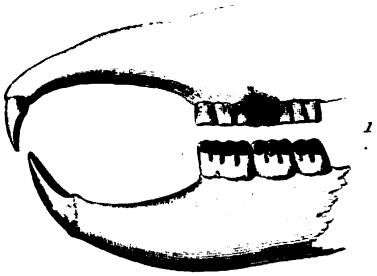
Neotoma Floridana.

Engraved by A. Lawson Philad.ª

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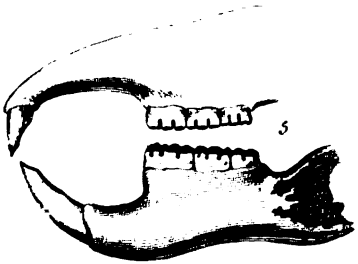










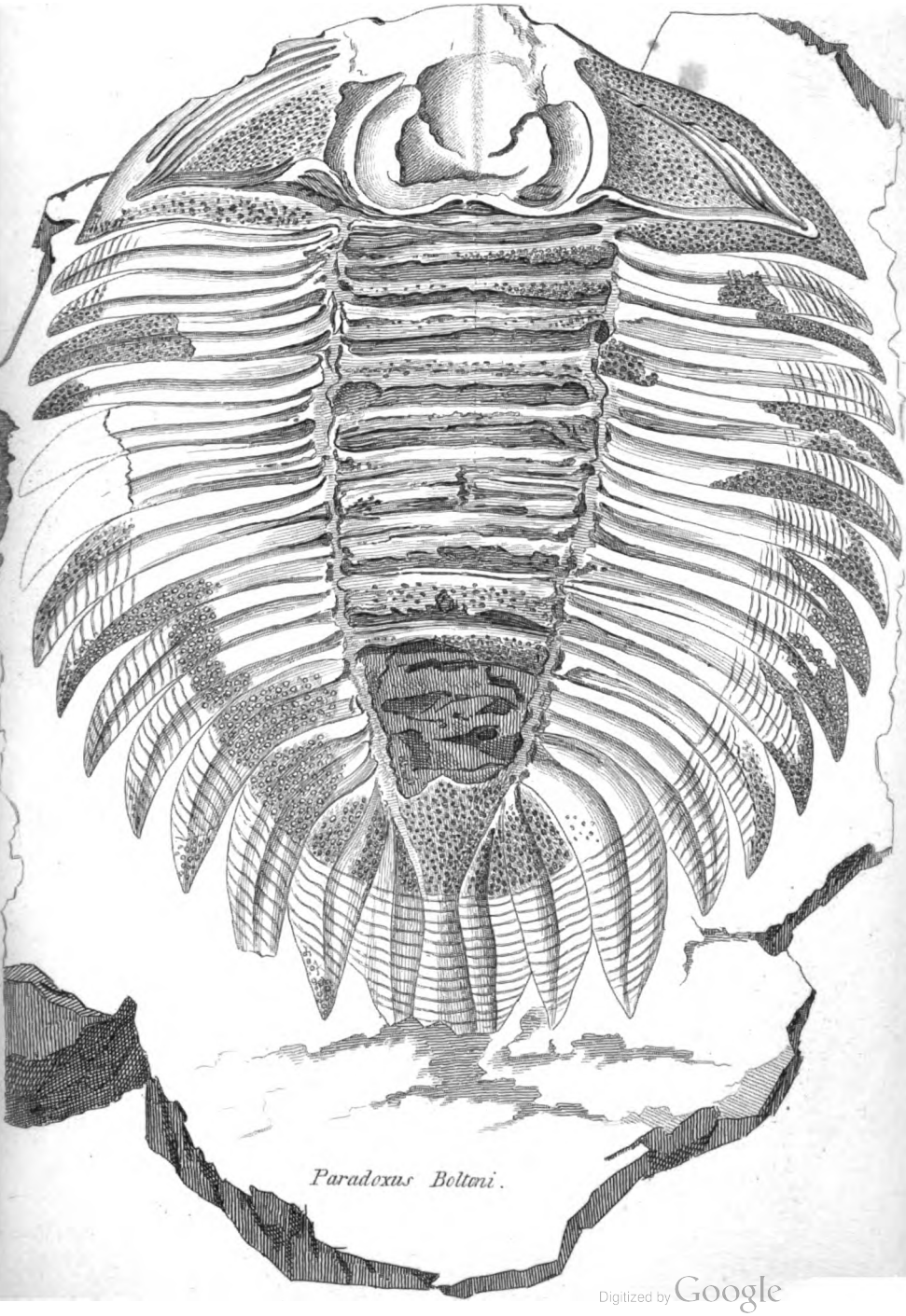






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Paradoxus Boltoni.

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PLATES TO VOL. IV.

PLATE I. Fig. 1. Portion of the lower jaw of a fossil Crocodile, right side, lateral view.
2. Anterior view of the same.
3, 4, 5. Different views of a fossil vertebræ.
6, 7. Two views of a vertebræ from another part of the column.
8. Fossil tooth of Crocodile, natural size.

II. Os hyoides of the Mastodon.
Fig. 1. Basis front view, two-thirds natural size.
2. Appendix, do. do. do.
3. Cornu, do. do. do.
5. Feldspar, primitive.
6. Feldspar, progressive.

III. Scolopsis sayanus.

IV. Raia desmarestia.
Fig. 1. Dorsal view.
2. Ventral view (imperfect.)
a. Spines exterior to the eyes.
b. Spines of the pectoral fins.

V. Raia chantenay.
Fig. 1. Male, ventral view.
2. Male, dorsal view.
3. Female, dorsal view.
4. Female, ventral view.
5. Fringed appendice of the nostrils.
6. Spine of the pectoral fins.
7. Mouth.
8. Teeth.

VI. Cephaloptera giorna.
Fig. 1. Ventral view with the appendages reflected.
2. Fœtus, ventral view, the appendages in the natural position.
3. Fœtus, dorsal view, the appendages partly extended.
4. Fœtus, lower part of the back and tail.

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VII. Fossil shells.
Fig. 1. Turritella plebeia.
2. Natica interna.
3. Buccinum porcinum.
4. ——— aratum.
5. Fusus 4-costatus.
6. Dispotæa grandis.
7. Fusus cinereus.

VIII. Fossil shells.
Fig. 1. Fissurella redimicula.
2. Ostrea compressirostra.
3. Dentalium attenuatum.
4. Serpula granifera.

IX. Fossil shells.
Fig. 1. Pecten jeffersonius.
2. ——— clintonius.
3. ——— septenarius.
4. Plicatula marginata.
5. Astarte undulata.
6. ——— vicina

X. Fossil shells.
Fig. 1. Arca arata.
2. —— centenaria.
3. —— incile.
4. Pectunculus subovatus.
5. Nucula lævis.
6. ——— concentrica.
7. Tellina æquistriata.
8. Lucina contracta.

XI. Fossil shells.
Fig. 1. Isocardia fraterna.
2. Crassatella undulata.

XII. Fossil shells.
Fig. 1. Venericardia granulata.
2. Venus deformis.
3. Cytheria convexa.

XIII. Fossil shells.
Fig. 1. Lucina cribraria.
2. Corbula cuneata.
3. ——— inequale.
4. Panopæa reflexa.

XIV. Fig. 1. Dorsal vertebræ of a Plesiosaurus.
2, 3, 4. Views of a tooth of a Saurien reptile.
5. Teeth of Squalus, from the coast of Africa.
a. from upper, b. from lower jaw.

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6. Teeth of Squalus perlon, from Adventure Bay.
 a. from upper, b. from lower jaw.
7. Teeth of Squalus cuvier, from the coast of N. Holland.
 a. from upper, b. from lower jaw.

XV. Cyclura carinata.

XVI. Cyclura teres.

XVII. Fig. 1. Pholis quadrifasciatus.
2. Exocetus appendiculatus.

XVIII. Fig. 1. Scincus bicolor.
2. Seps sexilineata.

XIX. Fig. 1. Agama vultuosa.
2. Modiola opifex imbedded in its mound, magnified.
 a. external, b. internal view, magnified.

XX. Agama cornuta.
 b. c. spines, d. section of a spine.

XXI. Neotoma floridana.

XXII. Fig. 1. Neotoma floridana, profile view of the jaws magnified.
2. Lower jaw, left side, with the alveolar process removed, in order to exhibit the roots of the teeth, natural size.
3. Molares of the upper jaw, left side, magnified.
4. Molares of the lower jaw, left side, magnified.
5. Sigmodon hispidum, profile view of the jaws, magnified.
6. Lower jaw, natural size, left side, with the alveolar process removed, to exhibit the roots of the teeth.
7. Molares of the upper jaw, left side, magnified.
8. Molares of the lower jaw, left side, magnified.

XXIII. Paradoxus boltoni.

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ADDENDA ET CORRIGENDA.

Page 8, line 24, for *dihedral* read *trihedral.*
26, 4, for 322, read 323.
24, for *there*, read *this.*
27, 14, for 16, read *16.
30, 23, for *Polytmus* read *Orthorhynchus.*
31, 7, dele "*referring to.*"
34, 4, add T. *fuscus*, Gmel. Lath.
3 from the bottom, for *aquatius* read *aquaticus.*
36, 4, for 568, read 556.
47, 21, add E. *ferruginea*, Gmel. Lath. female.
59, 2, from the bottom, for *Passerina* read *Spiza.*
last line, dele the *.
60, dele the 9th line.
63, 9, dele *and Emberiza feruginea.*
11, dele *numerous.*
dele last line.
143, 2 from the last, dele "2."
152, 17, for 3, read 2.
169, 5, from the bottom, for *his*, read *this.*
170, 14, for *exteriore* read *exteriori.*
last line, for *with the*, read *with.*
182, 18, for *But we*, read *We.*
197, 3, for 84, read 85.
8, for 89, read 87.
199, 15, for *Black-pole*, read *Black-poll.*
208, 11, for *Cistudo*, read *Cistuda.*
last line, for *reticulata* read *reticularia.*
209, passim the same.
214, 9, for *Cistudo*, read *Cistuda.*
231, 6, for 9.20, read 92.0.
8, for 98.0, read 88.0.
254, 3 from the bottom, for *canadensisatric apillus*, read *atricapillus canadensis.*
262, 13 and 14, dele *Vieill. pl.* 28.
274, 2, for *this genus* read *the genus Icterus.*
275, 12, insert 56, before Picus.
313, 19, for *punctipes* read *meraca.*
351, 3, dele *and figured.*

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